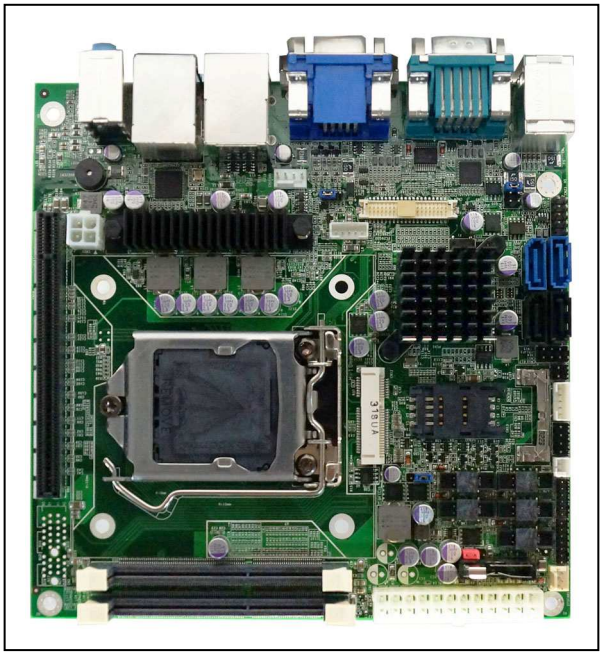
User Manual

MB-8303

Mini-ITX support Intel® 4th generation Core™ i7/i5/i3/ LGA1150 processor, Intel® Q87 chipset, DDR3 up to 16GB, 2 x Intel® Giga LAN, HDMI, DVI, VGA & LVDS, 4 x SATA, 8 x USB, 6 x COM, GPIO, HD Audio, PCI-Express X16 & X1 slots, Mini-PCIe socket, ATX power supply



Ver.	Release Date	Update
1.0	2013.12.13	Release
1.1	2014.01.09	

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For technical supports, please send your inquiry to sales@aewin.com.tw

Packing list

Before use this product, please make sure that the following materials have been shipped.

- 1 x MB-8303 board
- 1 x SATA cable, L/ 200mm (p/n: 46L-SATA11-00)
- 1 x CD Driver Utility

p/n: 46L-SATA11-00

Model Name	Description
MB-8303A	Mini-ITX with **Intel Q87** PCH, 2 GLAN,HDMI/DVI/VGA/LVDS, 6 COM, USB,Mini-PCIe socket, 4 SATA, PCIe X16 slot
MB-8303B	Mini-ITX with **Intel Q87** PCH, 2 GLAN,HDMI/DVI/VGA/LVDS, 6 COM, USB,Mini-PCIe socket, 4 SATA, PCIe X16 & PCIe X1 slots

* If any of those items are missing or damaged, please contact with sales representative or distributor

Optional Accessory

Photo	Model Name
	P/N: RE-S01 PCIe riser card support 1 x PCIe X16 & 1 x PCI slots Note: Work with MB-8303B only
	P/N: RE-S02 PCIe riser card support 2 x PCI slots Note: Work with MB-8303B only
	P/N: RE-S03 PCIe riser card support 1 x PCIe X16 & 1 x PCIe X1 slots Note: Work with MB-8303B only
	P/N: 46L-ICOM38-00 Dual D-Sub 9-pin COM port card, L/ 250mm, with bracket
	P/N: 46L-IUSB07-AA Dual USB cable, L/ 250mm, with bracket

Safety Information

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation Safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

Contents

Chapter 1 General Information 8

1.1 Introduction 8
1.2 Specification 9
1.3 Block Diagram 11
1.4 Board layout Dimension 12
1.5 IO / Connector 14

Chapter 2 Hardware installation 16

2.1 The location of onboard connectors 16
2.2 The location of onboard jumpers 18
2.3 The function list of onboard jumpers setting 19
2.3.1 JP1 for Clean CMOS jumper 19
2.3.2 JP2 for Power AT/ATX mode selection 20
2.3.3 JP3 for clear RTC 21
2.3.3 JP4 for LVDS Panel voltage select 22
2.3.3 JP5 for LVDS brightness control mode 23
2.3.4 JP7 for BIOS write protect 24
2.4 The pin define of onboard pin header 25
2.4.1 CN1 for ATX power supply connector 25
2.4.2 CN2 for PCI-Express X1 slot 26
2.4.3 CN3 for low pin count pin header 27
2.4.4 CN4 for COM4 / RS232 box header 28
2.4.5 CN5 for COM3 / RS232 box header.....29
2.4.6 CN6 for COM5 / RS232 box header 30
2.4.7 CN7 for 8-bit GPIO pin header 31
2.4.8 CN8 for COM6 / RS232 box header 32
2.4.9 CN9 for COM2 / RS232/422/485 box header 33
2.4.10 CN10 for Full-size Mini-PCIe WLAN LED indictor 34
2.4.11 CN11 for front panel pin header 35
2.4.12 CN12 for Full-size Mini-PCIe socket 36
2.4.13 CN13 for SIM card holder 37

2.4.14 CN14 for Smbus pin header 38
2.4.15 CN15 for SPI programmer pin header 39
2.4.16 CN21 for Internal P4 4-pin power input connector.....40
2.4.17 CN22 for LVDS backlight pin header …….....41
2.4.18 CN23 for USB2.0 pin header …..…….. 42
2.4.19 CN24 for 24-bit dual channel LVDS connector 43

Chapter 3 BIOS setting menu 44

Chapter 4 Programming WDT & GPIO 69

4.1 GPIO DOS sample code 69
4.2 Watch Dog timer DOS sample code ……. 75
4.3 Device resource table ……...79

1.1 Introduction

MB-8303 is an industrial Mini-ITX motherboard supporting 4th Generation Intel® Core™ i7/i5/i3 LGA1150 Processors with built in Intel® HD Graphics. Onboard video connections include HDMI, DVI, VGA and 24-bit dual channel LVDS, enabling customers to select between them for triple independent display. The board features 2x SO-DIMM DDR3 1600MHz sockets, expandable to 16GB. Additionally the MB-8303 supports a variety of I/O including 2x GbE Intel® GLAN, 4x SATA for RAID, 2 x USB3.0 + 8 x USB 2.0, 1 x RS232/422/485 (jumper less selection) + 5 x RS232, PS2 Keyboard/Mouse, 1 x Mini-PCIe socket for expansion slot with WIFI/3G module option. For furthering graphical performance a 1 x PCIe x16 slot will allow the installation of discrete VGA card.

MB-8303delivers flexible expansion slots allowing customers to install one PCI-Express X16 card and Mini-PCIe cards. It is built with a SIM card holder capable of installing a SIM card with a Full-size Mini-PCIe 3G module for wireless connection. Further more it comes with a PCI-Express X1 slot that can be paired with AEWIN's riser card for an additional 1 ~ 3 PCI slots for various application.

About AEWIN

AEWIN offers reliable and solid products which are produced under Management System Standards: ISO9001-2000 Certificate. The certificate keeps us focused on our quality objectives of management and environmental production. Its willingness to customize standard products for meet unique customer needs makes AEWIN different. All ODM projects are welcome. Years of experiences enables AEWIN to fulfill the customer's vision, by delivering products to exact specifications. AEWIN R&D team is proud of its strong engineering background. R&D professionals account for 25% of the AEWIN workforce. We focus on developing new products for both emerging and established markets

For more information about OEM/ODM, please contact us :
Email: sales@aewin.com.tw TEL: +886-2-8692-6677

1.2 Specification of board

System	
From Factor	Mini-ITX motherboard
CPU	Support Intel® 4th Core™ i7/i5/i3 LGA 1150 processor
Chipset	Intel Q87 Express chipset
Memory	2 x 204-pin DDR3 1600 MHz / SODIMM up to 16GB, w/o ECC support
BIOS	AMI SPI BIOS
SSD	None
Watchdog timer	255 levels, 1 ~ 255 sec
Expansion	1 x PCI-Express X16 slot 1 x PCI-Express X1 (work with riser card for PCIe X1 or PCI 32-bit/33 MHz expansion slots) 1 x Full-size Mini-PCIe socket w/ USB, PCIe signal
Board Size	170mm x 170mm
Operating Temp.	0°C~60°C (32°F~140°F)
Storage Temp.	.-20°C~80°C (-4°F~176°F)
Operating Hum.	10%~90% (non-condensing)

Display	
Chipset	Intel® Haswell processor integrated
Display interface	1 x external HDMI 1.4a
	1 x external VGA
	1 x external DVI-D
	1 x internal 24-bit Dual Channel LVDS

Note : MB-8303A & MB-8303B base on Intel® Q87 chipset and support triple display at same time.

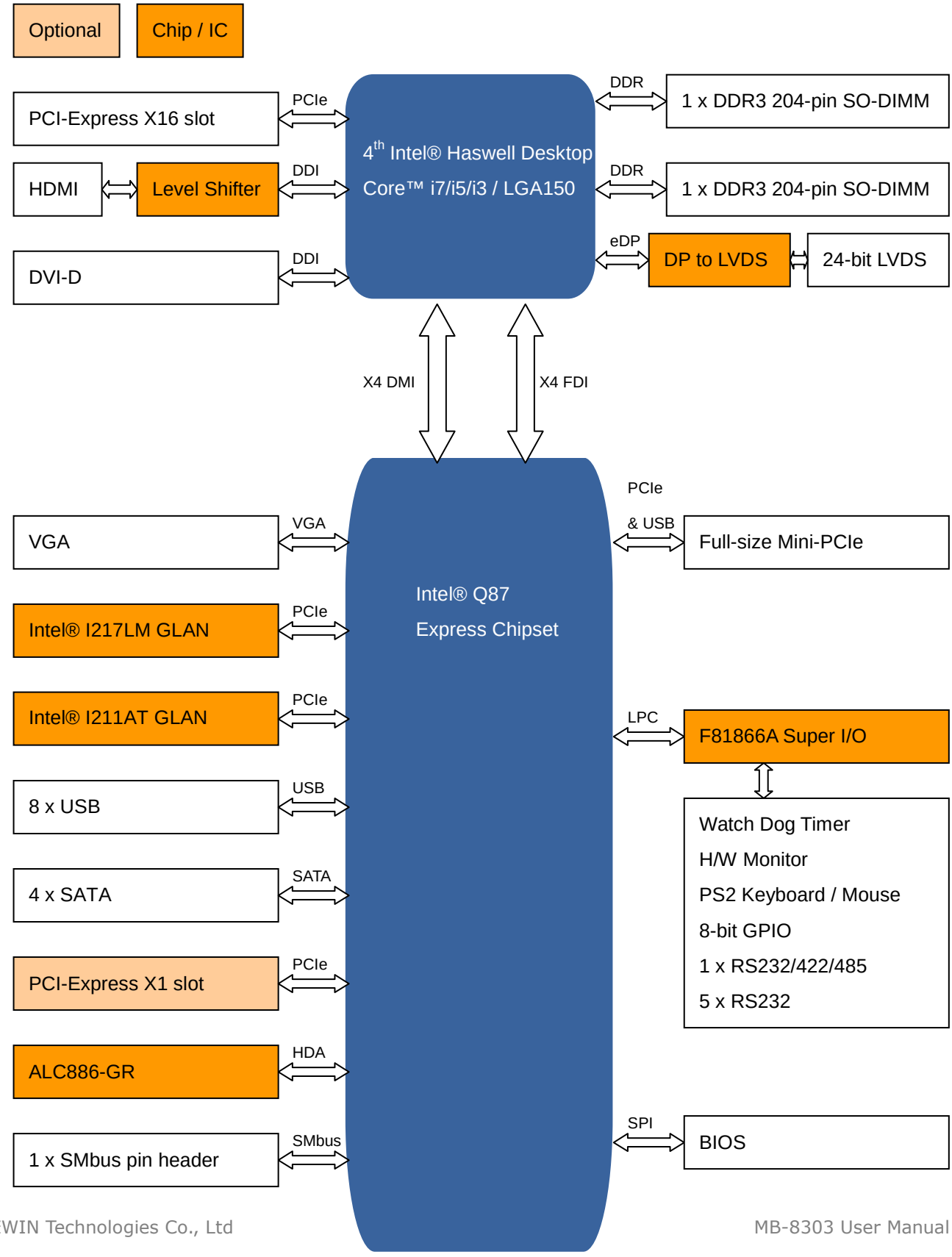
I/O	
Series Port	Internal : 1 x RS232/422/485 (COM2), 4 x RS232 External : 1 x RS232
SATA	4 x SATA
USB	External : 4 x USB3.0 + 2 x USB2.0 Internal : 4 x USB2.0
Ethernet	1 x Intel® i211AT PCIe controller 1 x Intel® i217LM PHY (Intel® AMT 9.0 function support)

Audio	External : Line-in/out , Mic-in
Digital I/O	8-bit GPIO interface
LPC	1 x LPC 2 x 10-pin header for Optional TPM module
Others	2 x cooling Fan header (Smart fan support) , 1 x PS/2 keyboard/Mouse 1 x Front Panel header for power on/off, reset, HDD/power LED indicator 1 x LVDS Backlight/inverter pin-header

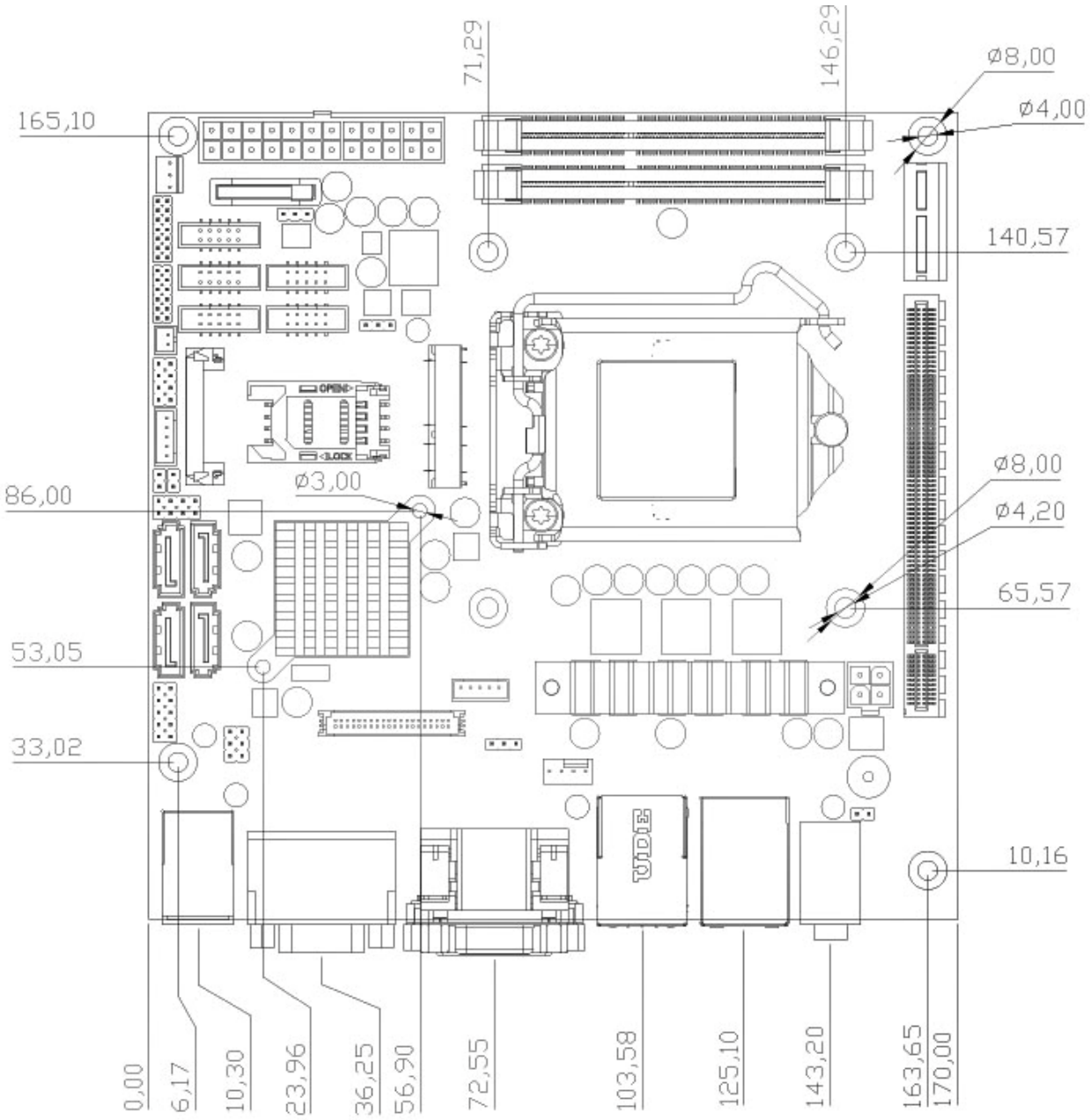
Power	
Power in	ATX power supply
Connector	1 x 24-pin ATX power connector. Compatible with 20-pin ATX power connector.

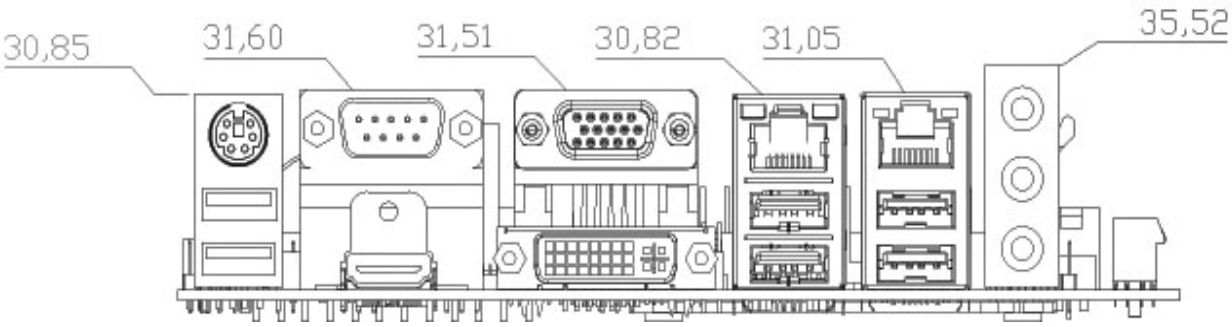
Note : All specifications and photos are subject to change without notice

1.3 Block Diagram



1.4 Board Layout Dimension

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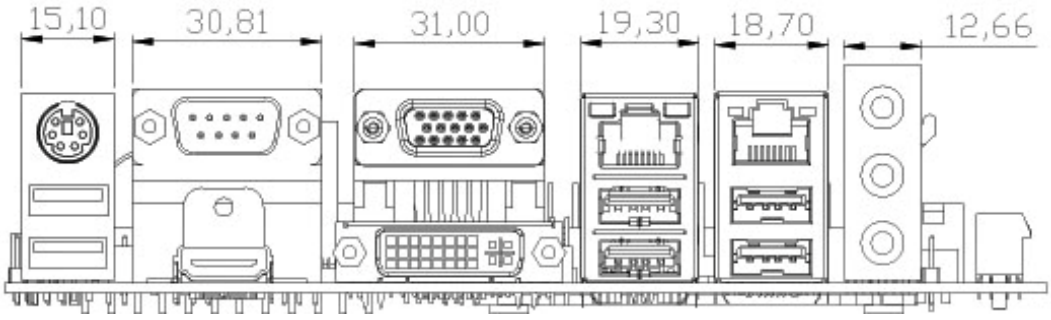
30,82
31,05
35,52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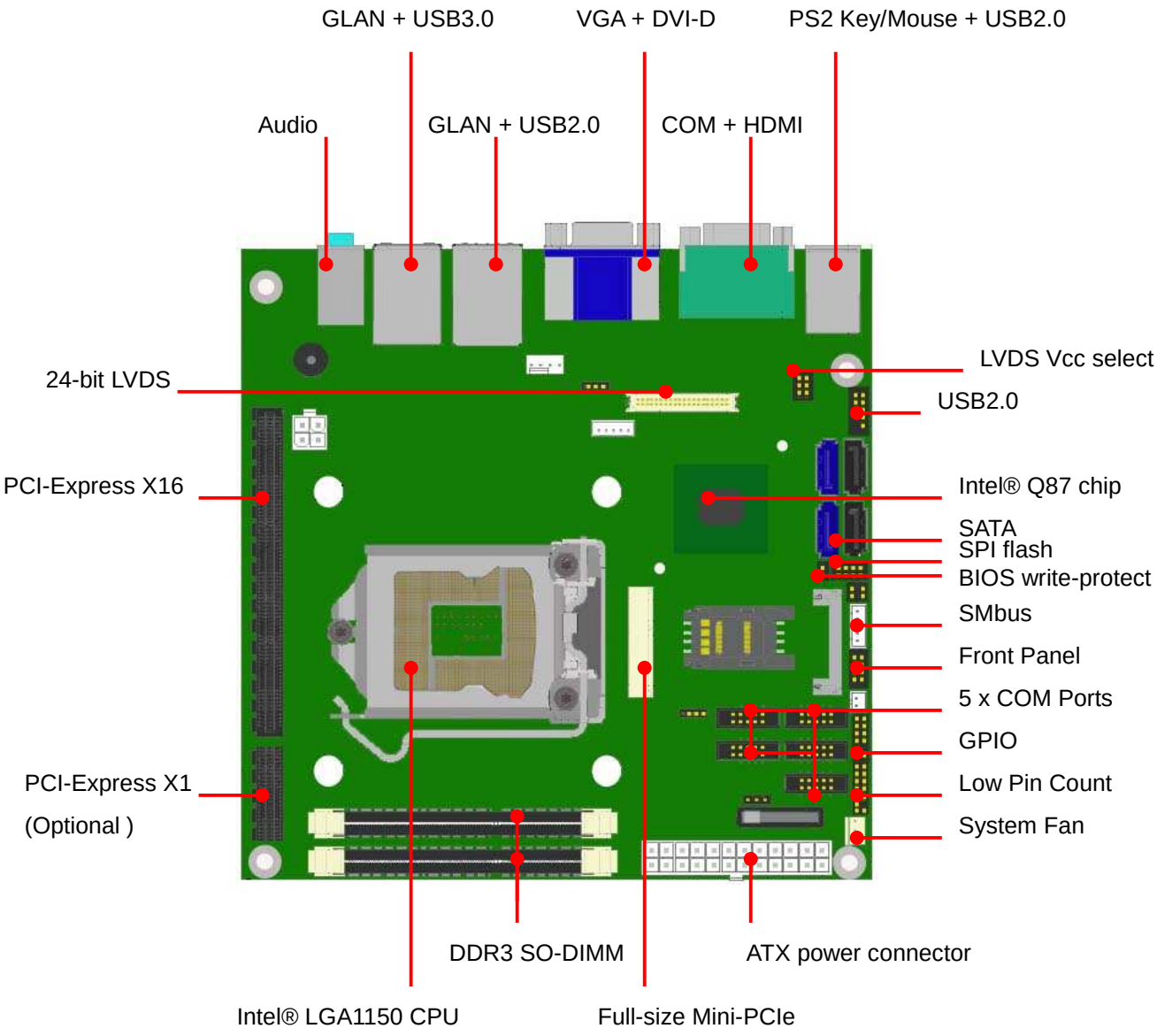
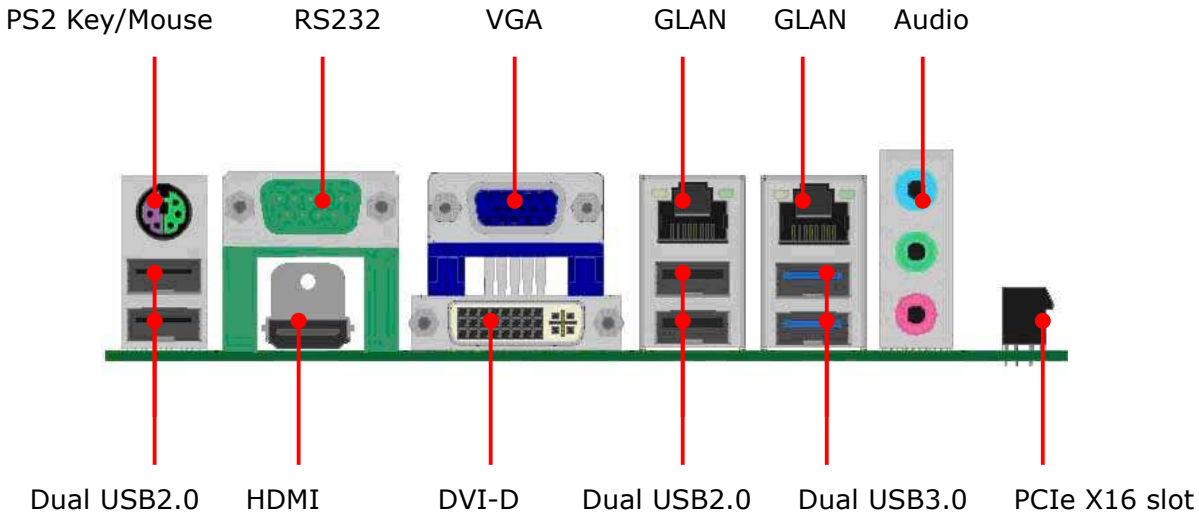
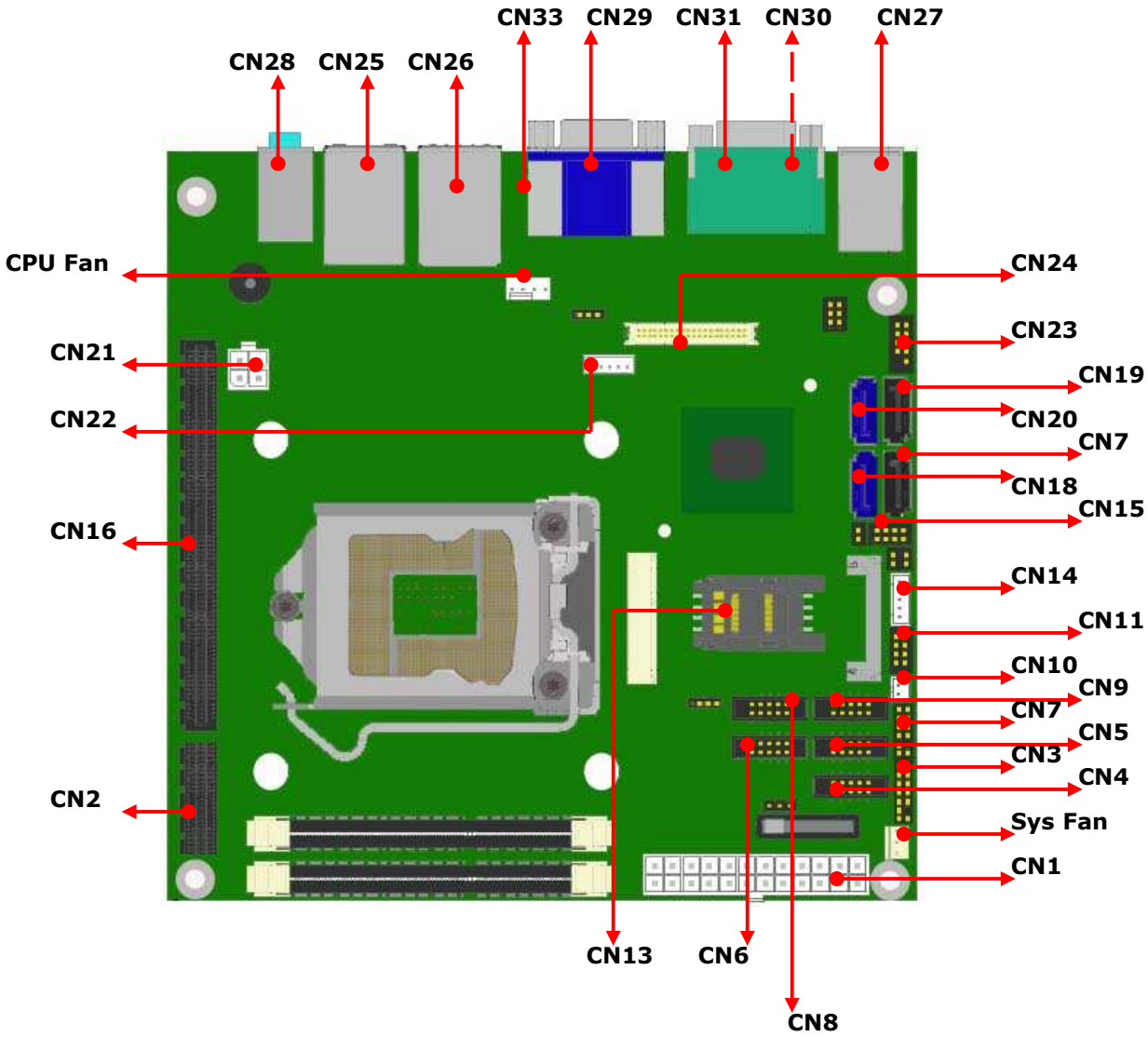
12,66

1.5 IO ports


GLAN + USB3.0
VGA + DVI-D
PS2 Key/Mouse + USB2.0
Audio
GLAN + USB2.0
COM + HDMI
LVDS Vcc select
24-bit LVDS
USB2.0
PCI-Express X16
Intel® Q87 chip
SATA
SPI flash
BIOS write-protect
SMbus
Front Panel
5 x COM Ports
GPIO
PCI-Express X1
(Optional)
Low Pin Count
System Fan
DDR3 SO-DIMM
ATX power connector
Intel® LGA1150 CPU
Full-size Mini-PCIe


PS2 Key/Mouse
RS232
VGA
GLAN
GLAN
Audio
Dual USB2.0
HDMI
DVI-D
Dual USB2.0
Dual USB3.0
PCIe X16 slot

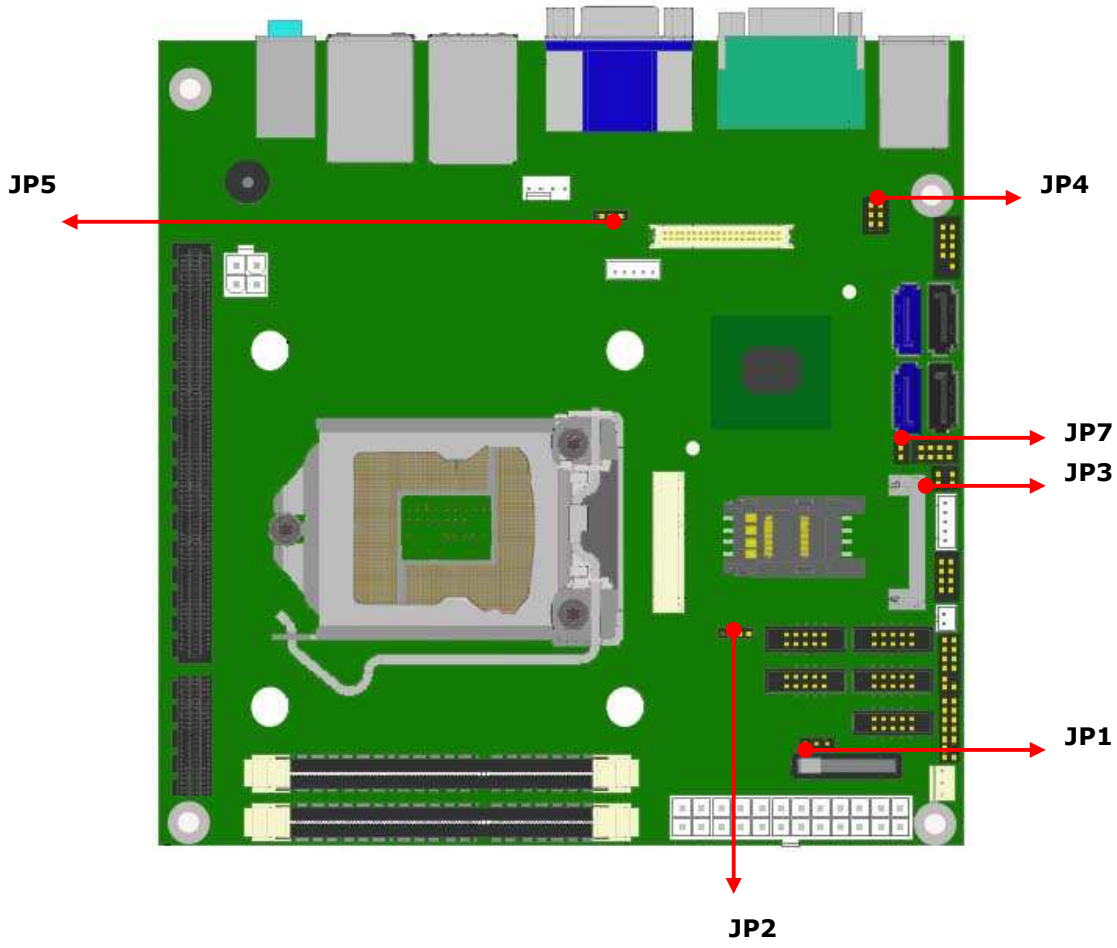
2.1 The location of onboard connectors



Label	Function
CN1	ATX power connector
CN2	PCI-Express X1 slot (Optional)
CN3	LPC pin header
CN4	COM4 pin header. RS232
CN5	COM3 pin header. RS232
CN6	COM5 pin header. RS232
CN7	8-bit GPIO pin header
CN8	COM6 pin header. RS232
CN9	COM2 pin header. RS232/422/485
CN10	Mini-PCIe WLAN LED pin header
CN11	Front panel pin header
CN12	Mini-PCIe socket
CN13	SIM card holder
CN14	SMBus pin header
CN15	SPI flash pin header
CN16	PCI-Express X16 slot
CN17	SATA2 conector
CN18	SATA3 connector
CN19	SATA2 connector
CN20	SATA3 connector
CN21	P4 4-pin 12V connector

Label	Function
CN22	LVDS backlight inverter
CN23	Dual USB 2.0 pin header
CN24	24-bit LVDS connector
CN25	LAN2 & dual USB 3.0 connector
CN26	LAN1 & dual USB 2.0 connector
CN27	PS2 Key/Mouse & dual USB 2.0
CN28	Audio Jack connector
CN29	VGA connector
CN30	COM1 connector. RS232
CN31	HDMI connector
CN32	N/A
CN33	DVI-D connector

2.2 The location of onboard jumpers



Label	Function
JP1	CMOS Clear jumper (1-2 : Normal , 2-3 : Clear CMOS)
JP2	AT / ATX power mode selection (1-2 : ATX , 2-3 : AT)
JP3	Clear RTC (Open : Normal , Shorted : Clear RTC)
JP4	LVDS Vcc power level selection (3.3V / 5V / 12V)
JP5	LVDS brightness control mode (1-2 : PWM , 2-3 : DC)
JP7	BIOS write-protect

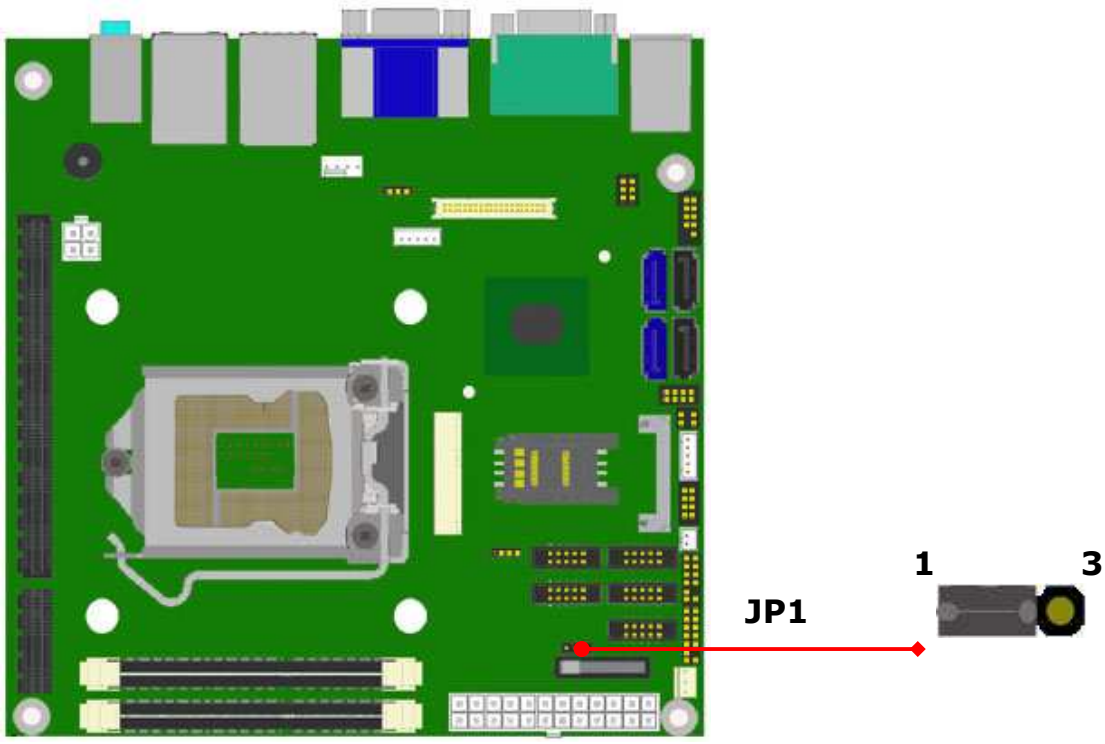
2.3 The function list of onboard jumpers setting

- 2.3.1 : JP1 for for Clear CMOS

If you want to clean the CMOS data, set jumper to 2-3 just for few seconds, Then, Move the jumper back to 1-2 pin

JP1	
Closed Pin	Result
1-2 *	Normal
2-3	Clear CMOS

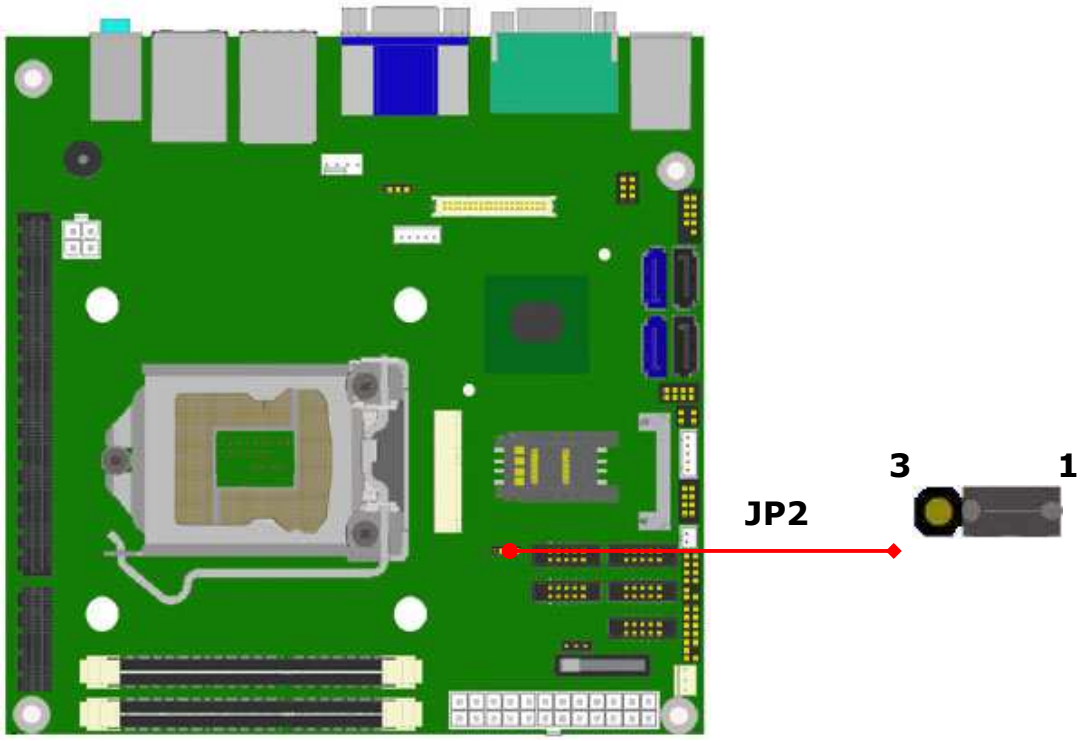
* Default setting



- 2.3.2: JP2 for ATX / AT mode

JP2	
Closed Pin	Result
1-2 *	ATX mode
2-3	AT mode

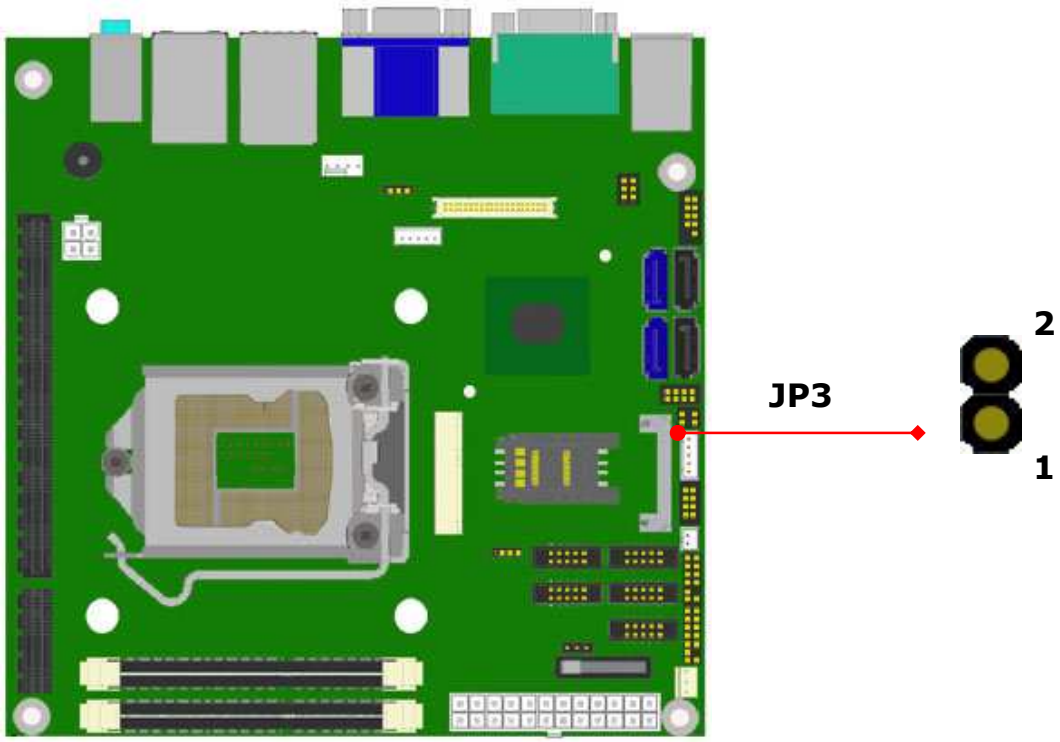
* Default setting



- 2.3.3 : JP3 for Clear RTC

JP3	
Closed Pin	Result
Open *	Normal
Shorted	Clear RTC

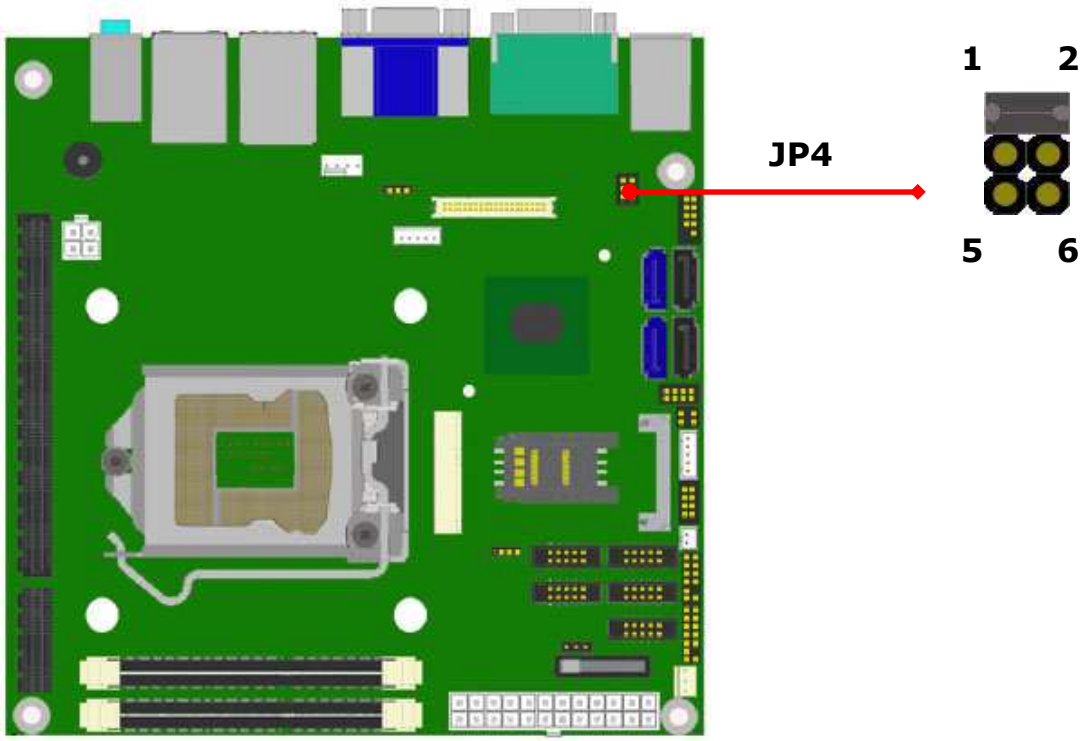
* Default setting



- 2.3.4 : JP4 for LVDS Panel Voltage select

JP4	
Closed Pin	Result
1-2 *	+3.3V
3-4	+5V
5-6	+12V

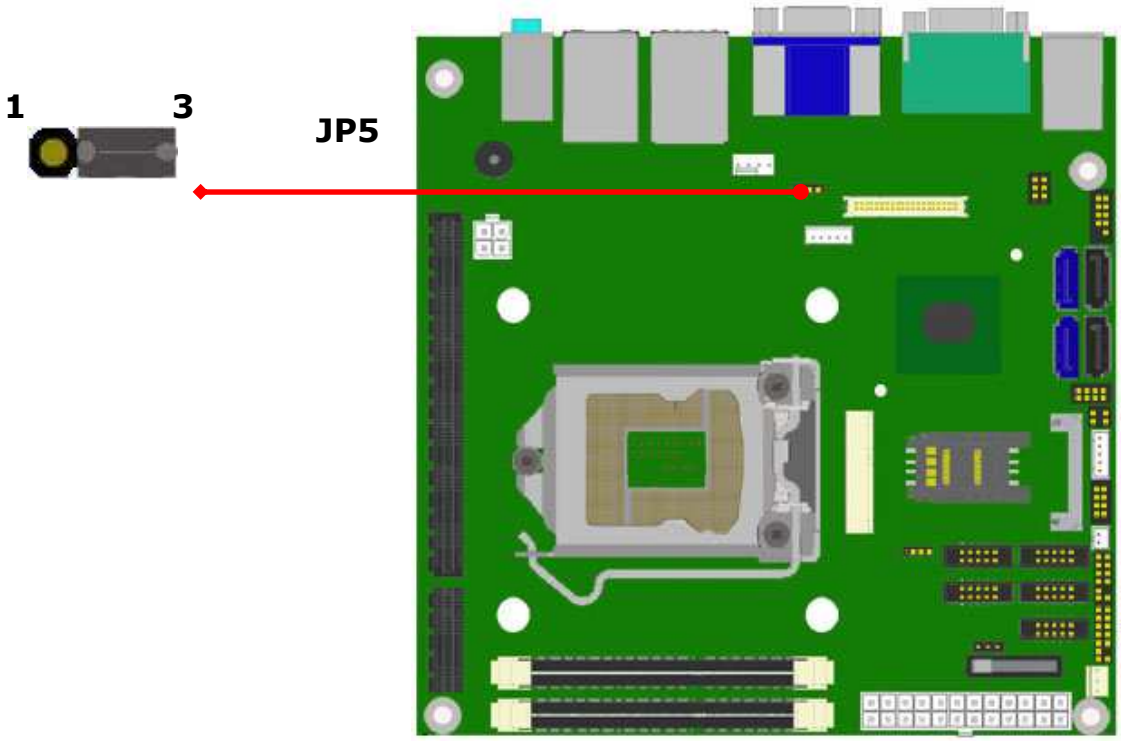
* Default setting



- 2.3.5 : JP5 for LVDS brightness control mode

JP5	
Closed Pin	Result
1-2	PWM mode
2-3 *	DC Level

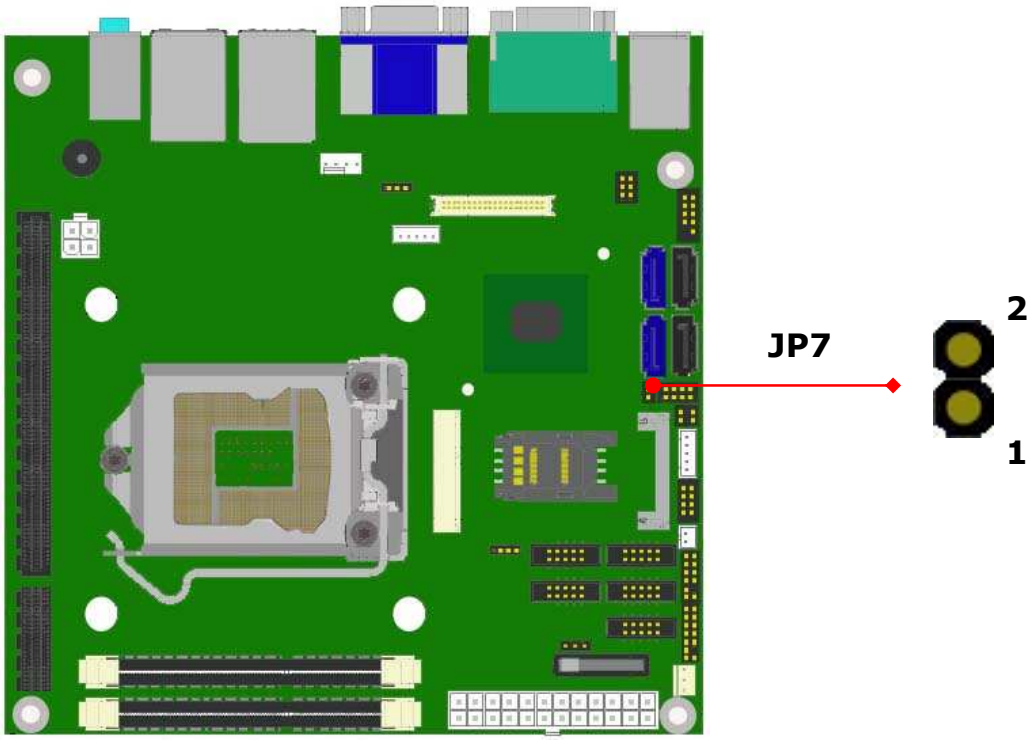
* Default setting



- 2.3.6 : JP7 for BIOS write protect

JP7	
Closed Pin	Result
Open *	Normal
Shorted	Write-protect

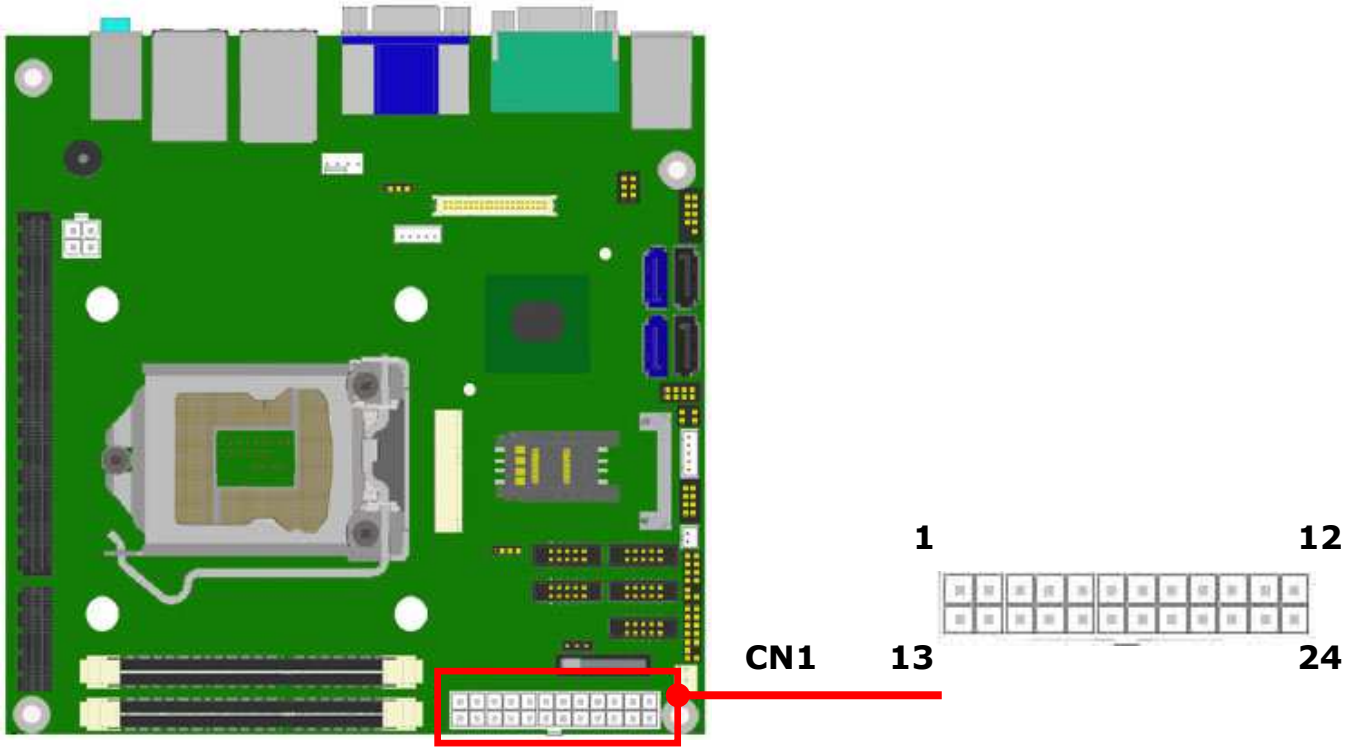
* Default setting



2.4 The pin define of onboard pin header

- 2.4.1 : CN1 for ATX power supply connector

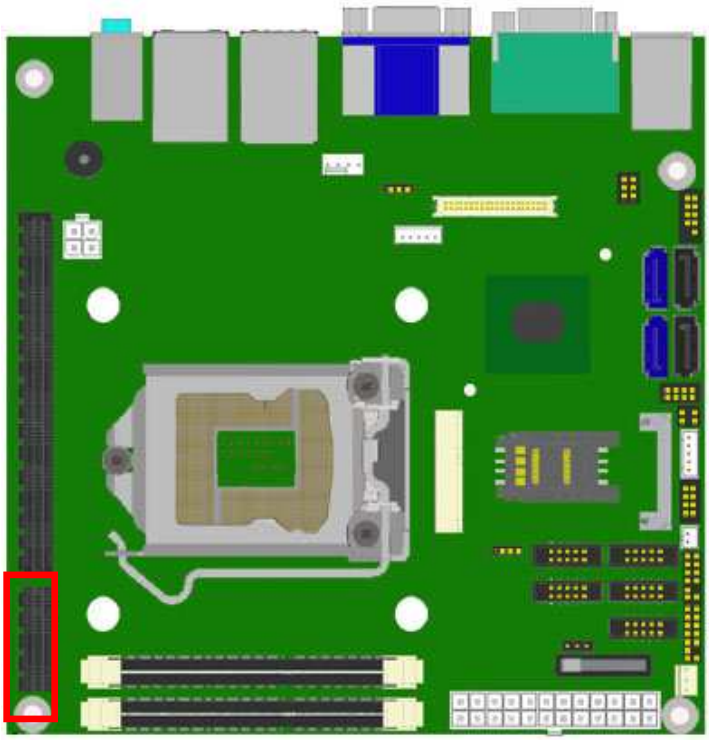
CN1 : 24-pin , pitch 2.0 mm			
Pin	**Signal**	**Pin**	**Signal**
1	3.3V	2	3.3V
3	GND	4	5V
5	GND	6	5V
7	GND	8	Power_OK
9	5VSB	10	12V
11	12V	12	3.3V
13	3.3V	14	-12V
15	GND	16	PS_ON
17	GND	18	GND
19	GND	20	RSVD
21	5V	22	5V
23	5V	24	GND



- 2.4.2 : CN2 for PCI-Express X1 slot

Note: This slot could work with AEWIN's RE-S0X series riser card to get PCIe X16 & PCI expansion slots And it's come with MB-8303B only.

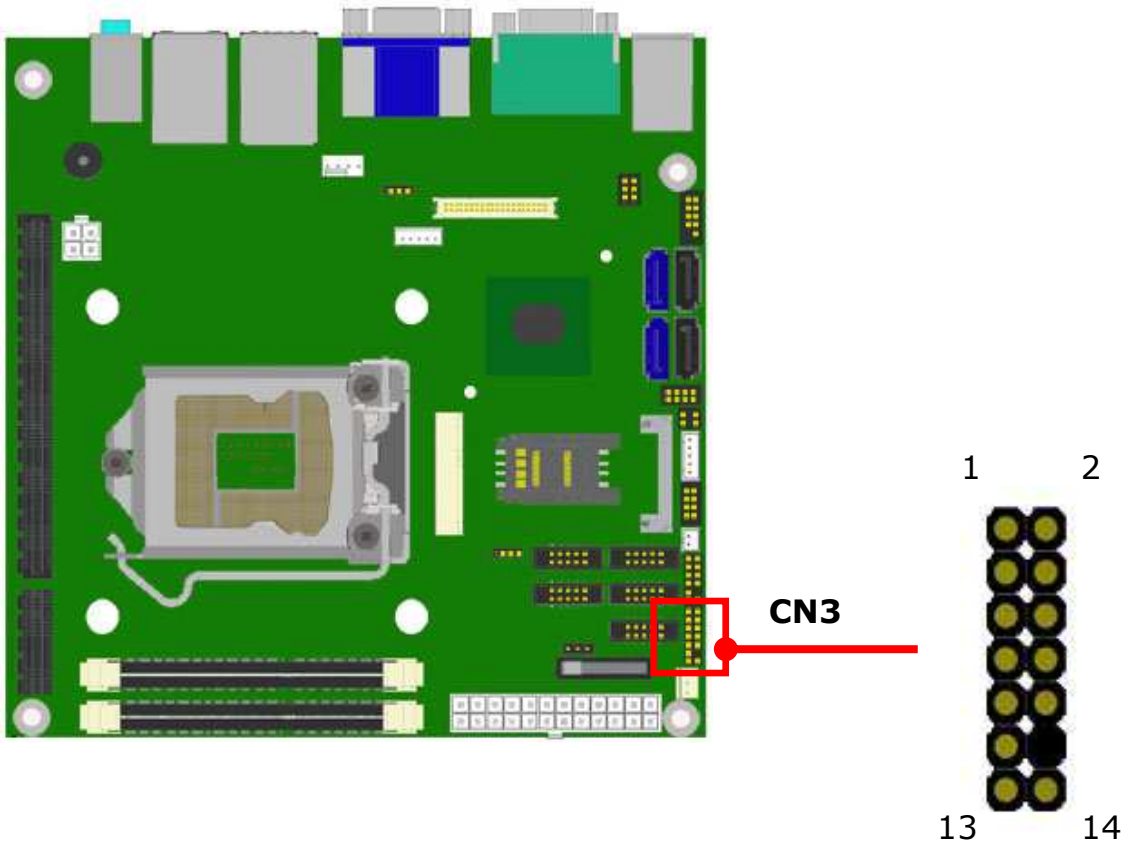
Pin	Side B	Side A
1	+12V	PRSNT1
2	+12V	+12V
3	+12V	+12V
4	GND	GND
5	SMCLK	TCK
6	SMDAT	TDI
7	GND	TOD
8	+3.3V	TMS
9	RST	+3.3V
10	+3.3V AUX	+3.3V
11	WAKE	PWRGD
	Key Notch	
12	Reserved	GND
13	GND	REFCLK+
14	HSOp	REFCLK-
15	HSOn	GND
16	GND	HSIp
17	PRSNT2	HSIn
18	GND	GND



Example for Configuration of with RE-S01 riser card

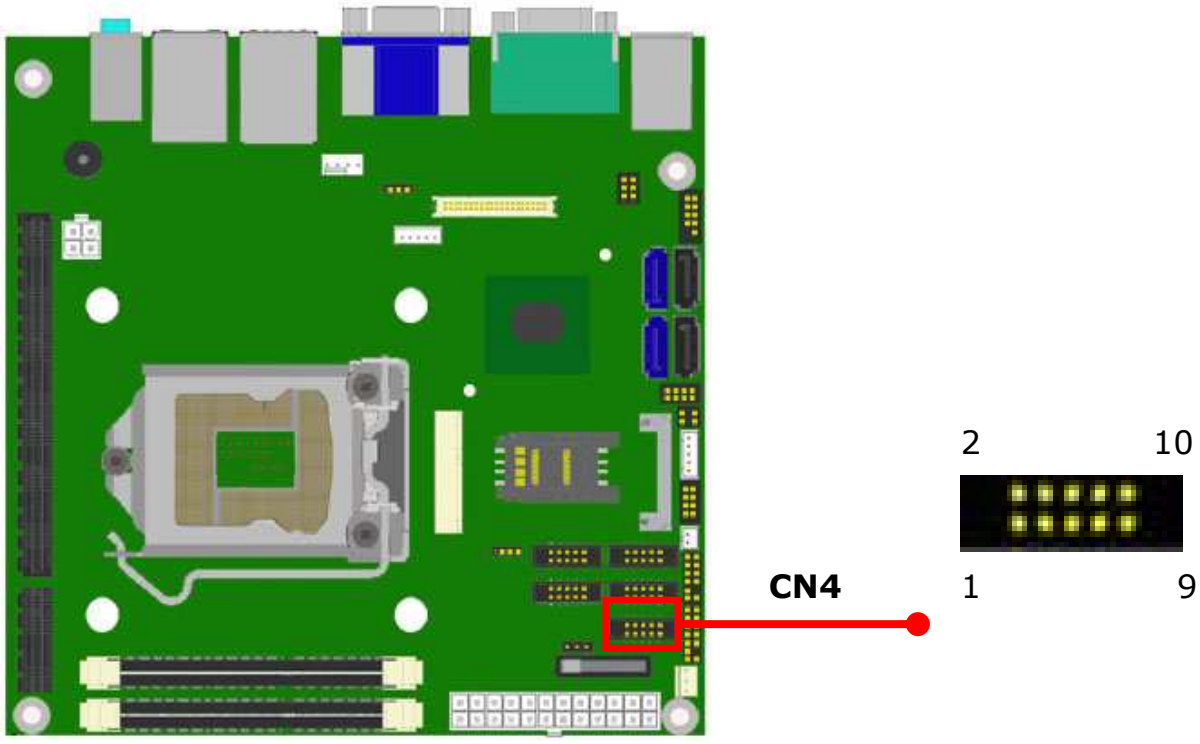
- 2.4.3 : CN3 for Low Pin Count pin-header

CN3 : 2 x 7 header , pitch 2.0 mm			
Pin	**Signal**	**Pin**	**Signal**
1	+3.3V	2	LAD0
3	LAD1	4	LAD2
5	LAD3	6	LFRAME
7	Reset	8	+5V
9	LPC clock	10	LPME
11	GND		Key
13	SERIRQ	14	LPC DREQ



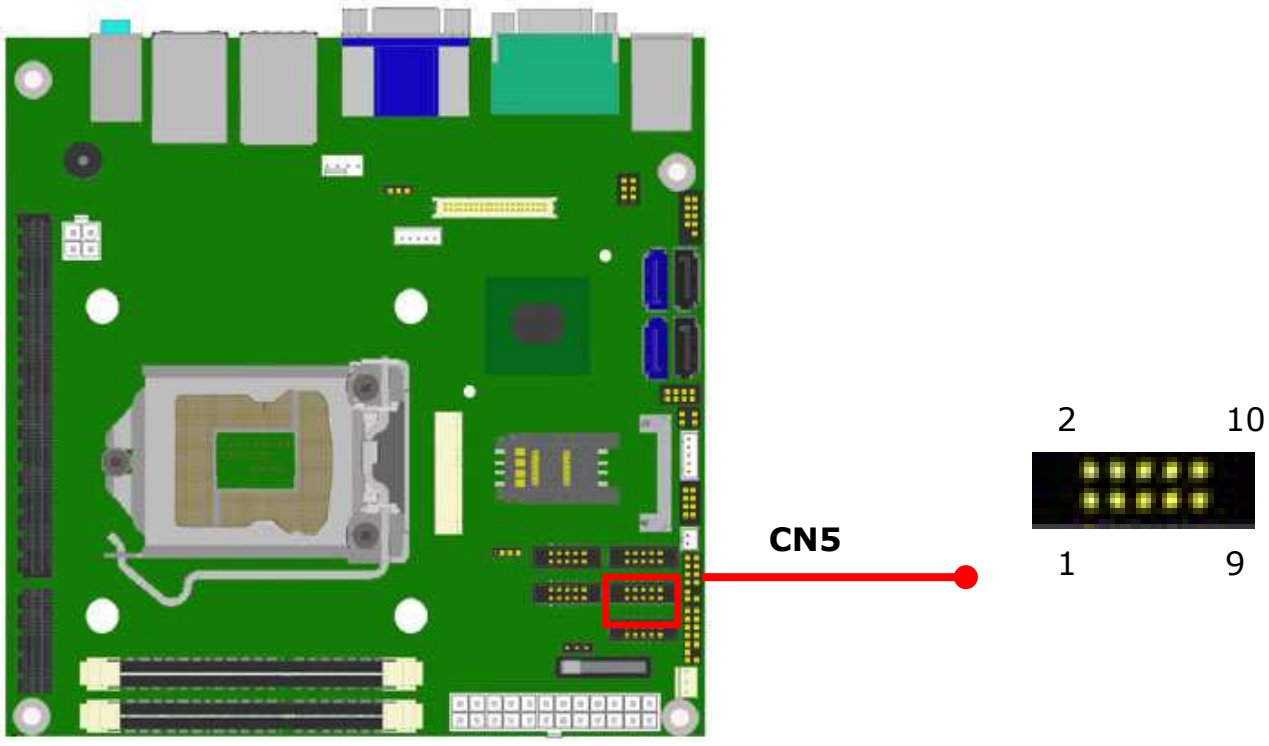
- 2.4.4 : CN4 for COM4 box header

CN4 : 2 x 5 header, pitch 2.00 mm			
Pin	**Signal**	**Pin**	**Signal**
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive Data	4	RTS, Request to send
5	TXD, Send Data	6	CTS, Clear to se
7	DTR, Data Terminal Ready	8	RI, Ring indicator
9	GND	10	N/C



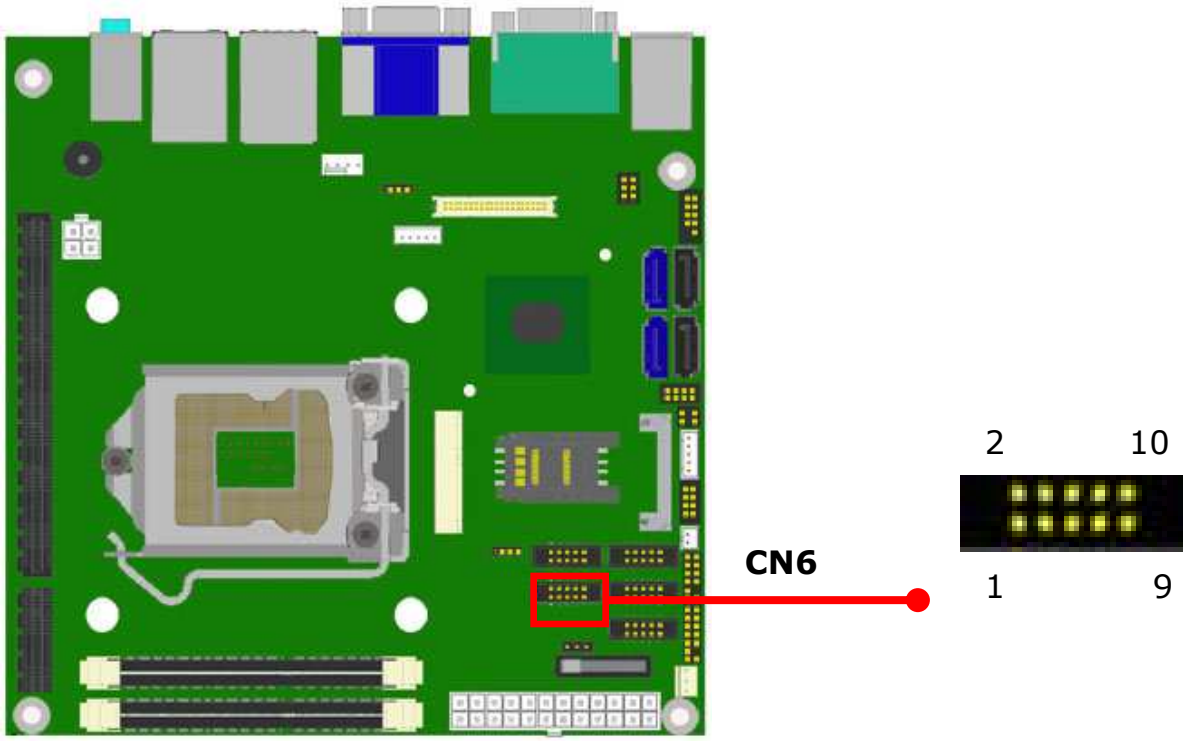
- 2.4.5 : CN5 for COM3 box header

CN5 : 2 x 5 header, pitch 2.00 mm			
Pin	**Signal**	**Pin**	**Signal**
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive Data	4	RTS, Request to send
5	TXD, Send Data	6	CTS, Clear to se
7	DTR, Data Terminal Ready	8	RI, Ring indicator
9	GND	10	N/C



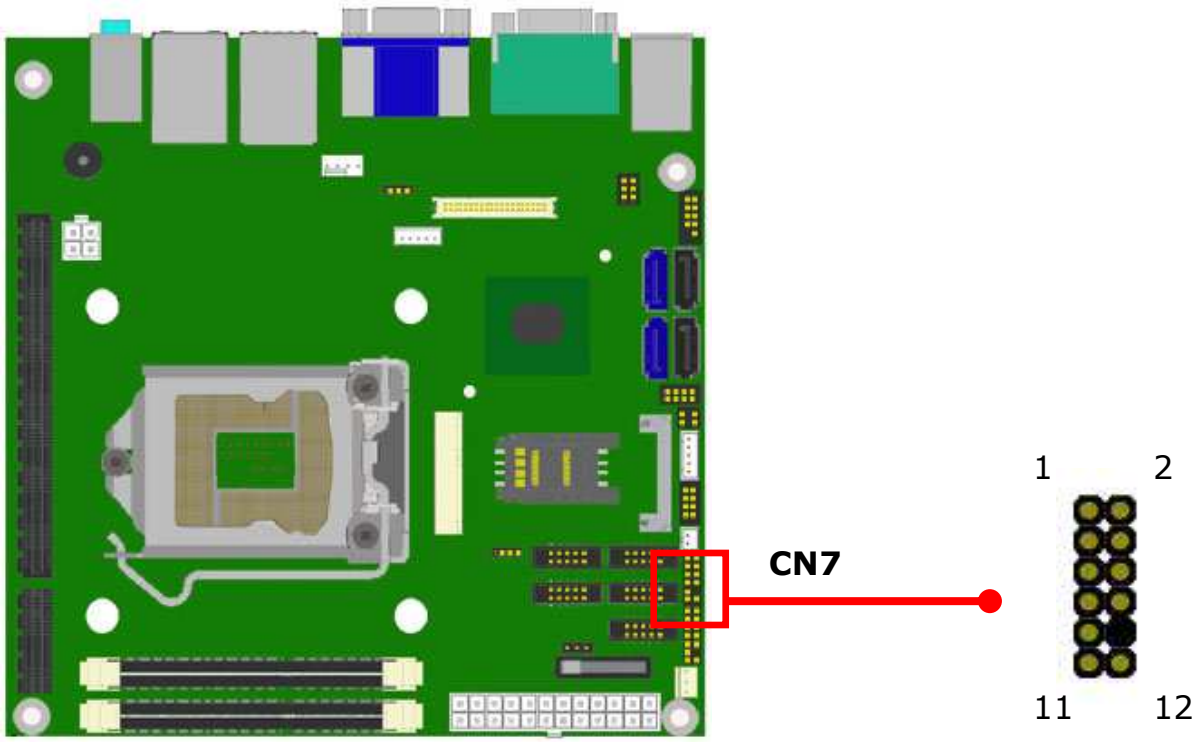
- 2.4.6 : CN6 for COM5 box header

CN6 : 2 x 5 header, pitch 2.00 mm			
Pin	**Signal**	**Pin**	**Signal**
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive Data	4	RTS, Request to send
5	TXD, Send Data	6	CTS, Clear to se
7	DTR, Data Terminal Ready	8	RI, Ring indicator
9	GND	10	N/C



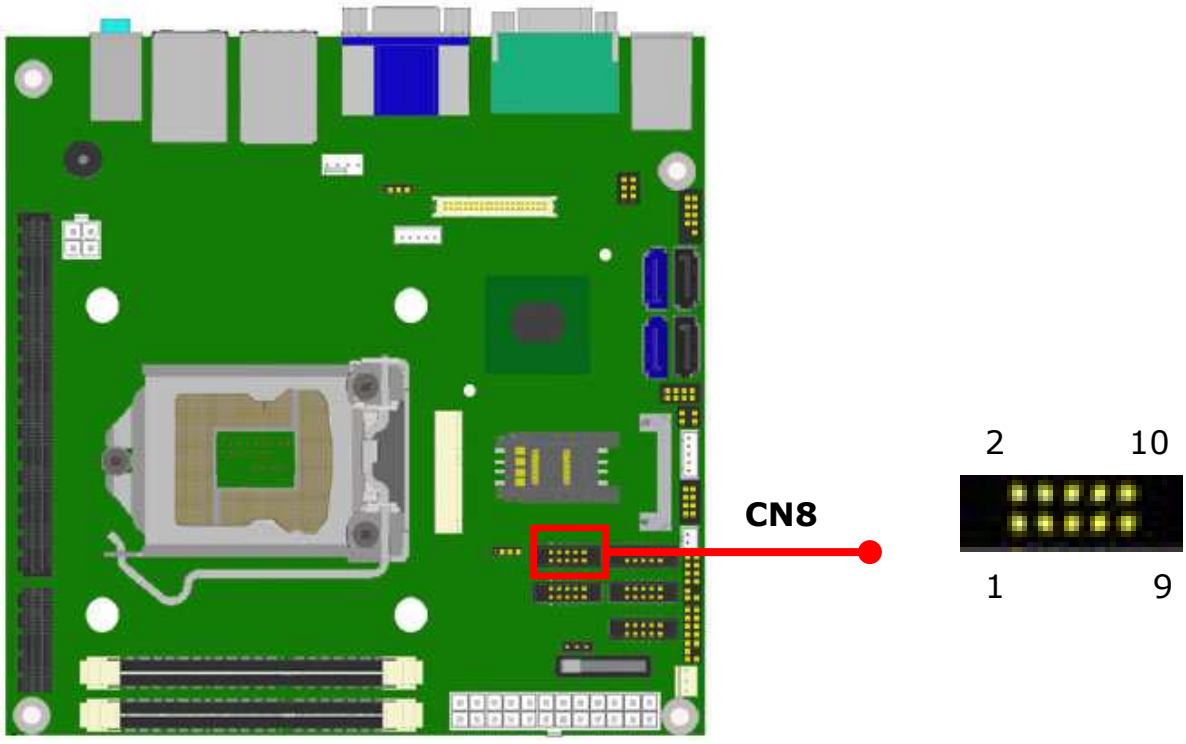
2.4.7 : CN7 for 8-bit GPIO

CN7 : 2 x 6 header , pitch 2.0 mm			
Pin	**Signal**	**Pin**	**Signal**
1	+3.3V	2	GPIO0
3	GPIO1	4	GPIO2
5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6
9	GPIO7	10	Key
11	+5V	12	GND



- 2.4.8 : CN8 for COM6 box header

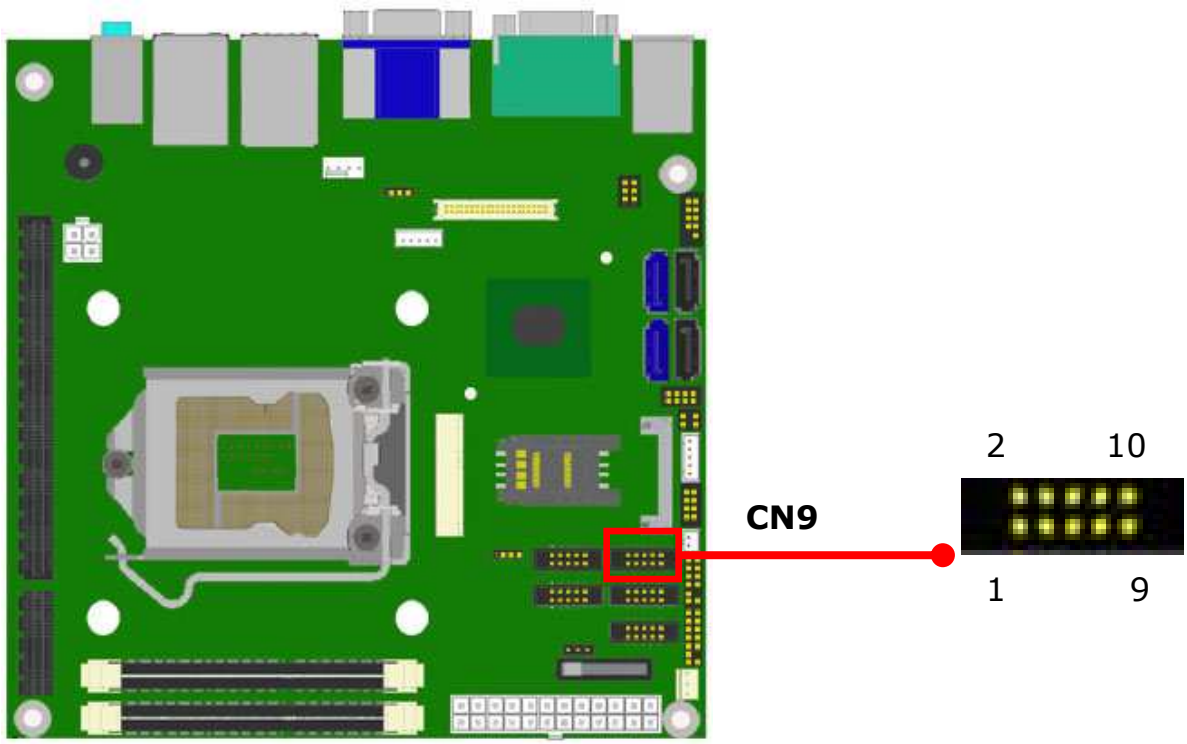
CN8 : 2 x 5 header, pitch 2.00 mm			
Pin	**Signal**	**Pin**	**Signal**
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive Data	4	RTS, Request to send
5	TXD, Send Data	6	CTS, Clear to se
7	DTR, Data Terminal Ready	8	RI, Ring indicator
9	GND	10	N/C



- 2.4.9 : CN9 for COM2 , RS232/422/485

Note: COM2 RS-232/422/485 mode could be set by BIOS. Default is RS-232.

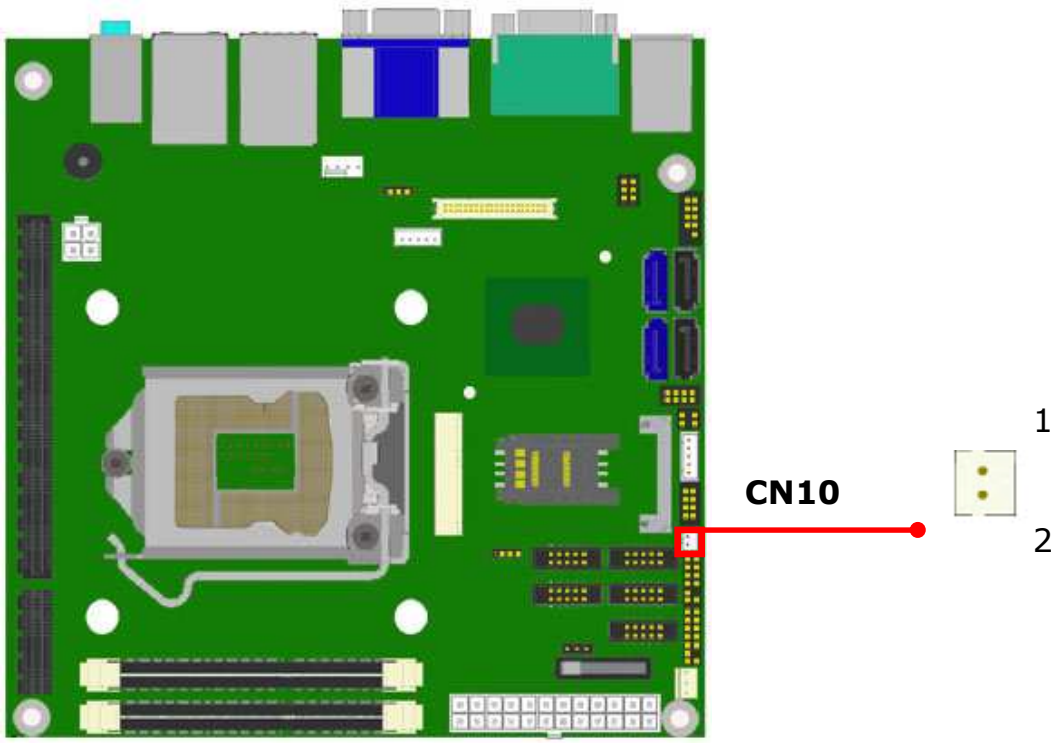
CN9 : 2 x 5 header , Pitch 2.00 mm			
Pin	**RS232 mode**	**RS422 mode**	**RS485 mode**
1	DCD, Data carrier detect	TXD-	TXD-
2	DSR, Data set ready		
3	RXD, Received Data	TXD+	TXD+
4	RTS, Request to send		
5	TXD, Transmitted Data	RXD+	
6	CTS, Clear to sent		
7	DTR, Data terminal ready	RXD-	
8	RI, Ring indicator		
9	GND		
10	N/C		



- 2.4.10 : CN10 for Full-size Mini-PCIe WLAN LED indictor

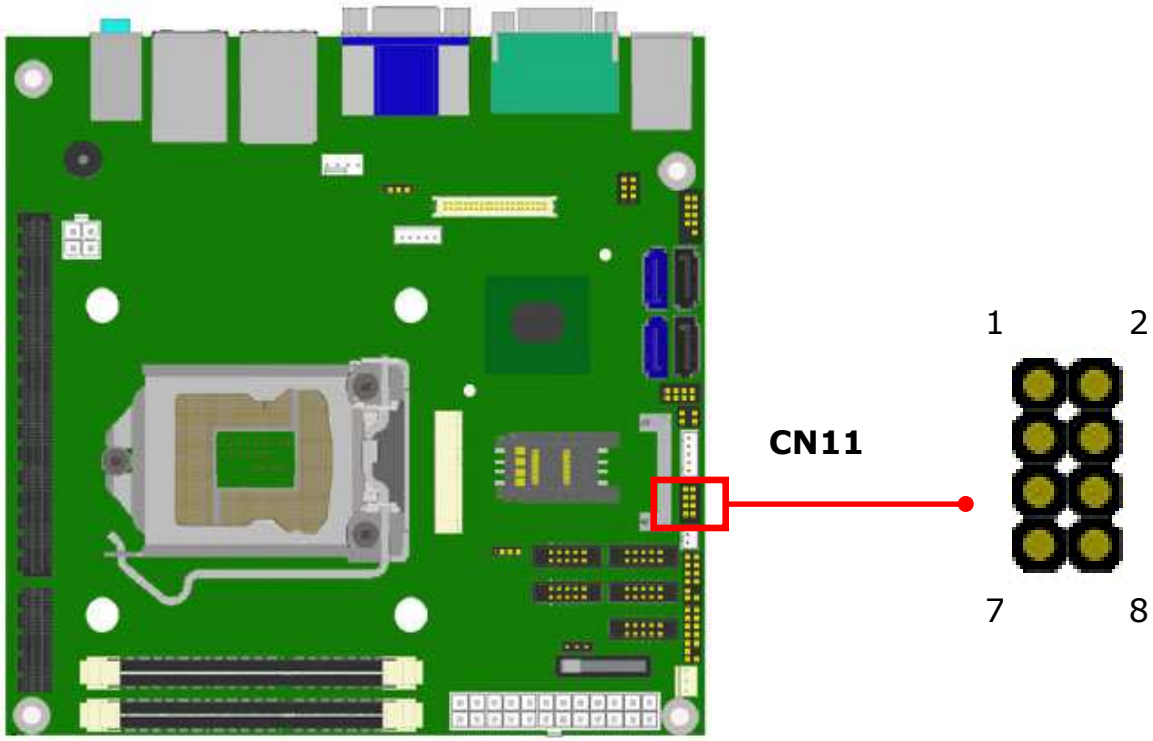
CN10 : 1 x 2 , 2-pin wafer			
Pin	**Signal**	**Pin**	**Signal**
1	LED_WLAN	2	+3.3V

Note: Full-size Mini-PCIe card could support Mini-PCIe module via PCIe or USB signal.



- 2.4.11 : CN11 for Front Panel pin header

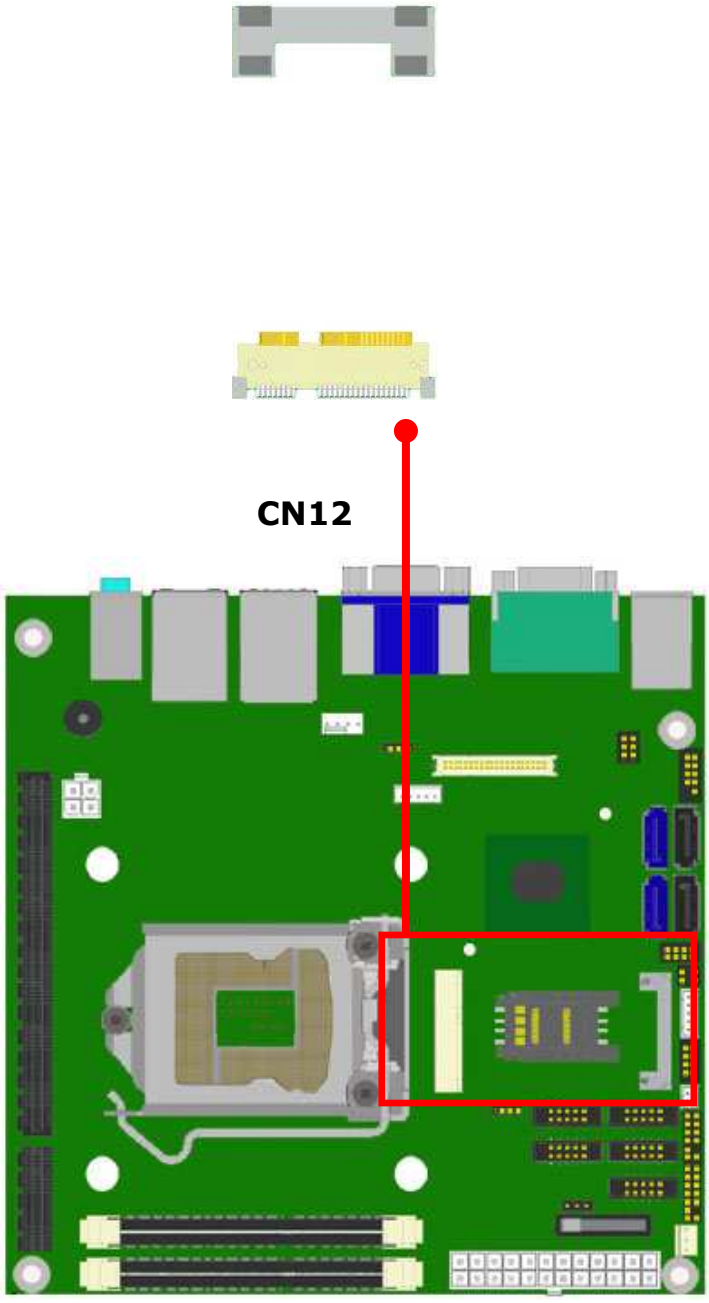
CN11 : 2 x 4 header , pitch 2.54 mm			
Pin	**Signal**	**Pin**	**Signal**
1	HDD_LED+	2	Power_LED+
3	HDD_LED-	4	GND
5	GND	6	GND
7	RESET+	8	Power_Switch



- 2.4.12 : CN12 for Full-size Mini-PCIe socket

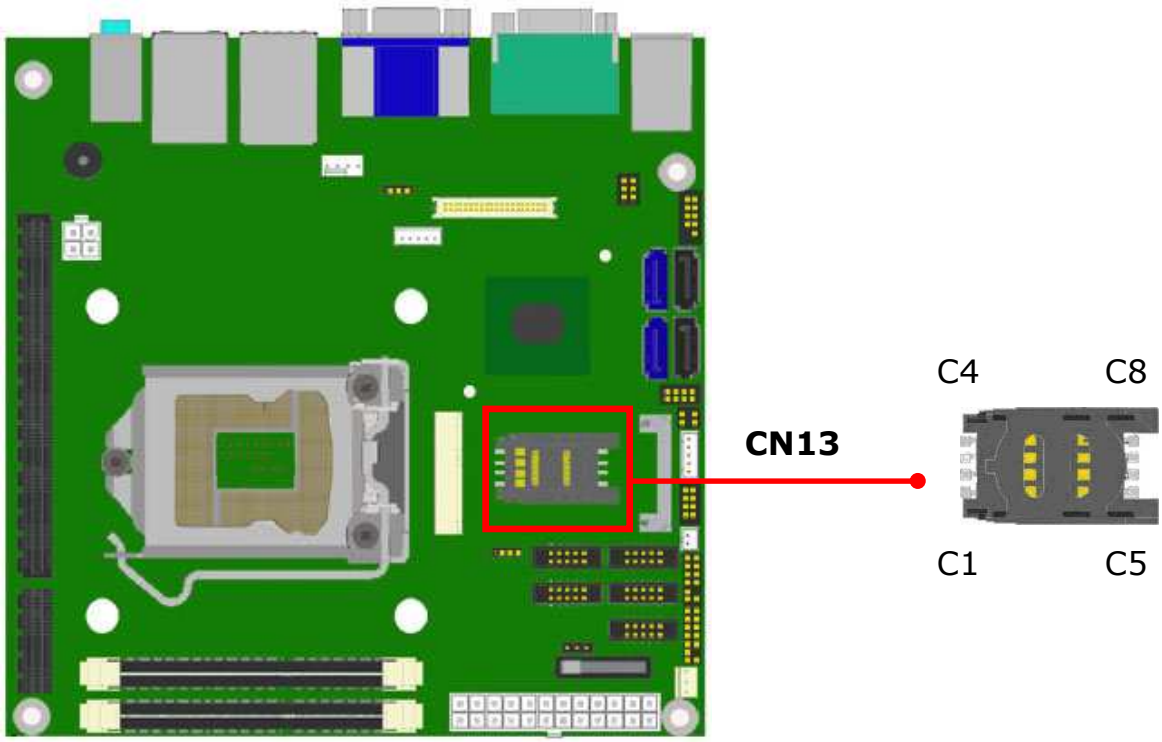
Note: Full-size Mini-PCIe card could support Mini-PCIe module via PCIe or USB signal.

Pin	Signal	Pin	Signal
1	WAKE	27	GND
2	+3.3V AUX	28	+1.5V
3	N/C	29	GND
4	GND	30	SMBCLK
5	N/C	31	PETN0
6	+1.5V	32	SMBDATA
7	CLKREQ	33	PETP0
8	UIM_PWR	34	GND
9	GND	35	GND
10	UIM_DATA	36	USB_D-
11	REFCLK-	37	GND
12	UIM_CLK	38	USB_D+
13	REFCLK+	39	+3.3V AUX
14	UIM_RESET	40	GND
15	GND	41	+3.3V AUX
16	UIM_VPP	42	LED_WWAN
17	UIM_C8	43	GND
18	GND	44	LED_WLAN
19	UIM_C4	45	N/C
20	W_Disable	46	N/C
21	GND	47	N/C
22	PERST	48	+1.5V
23	PERN0	49	N/C
24	+3.3V AUX	50	GND
25	PERP0	51	N/C
26	GND	52	+3.3V AUX



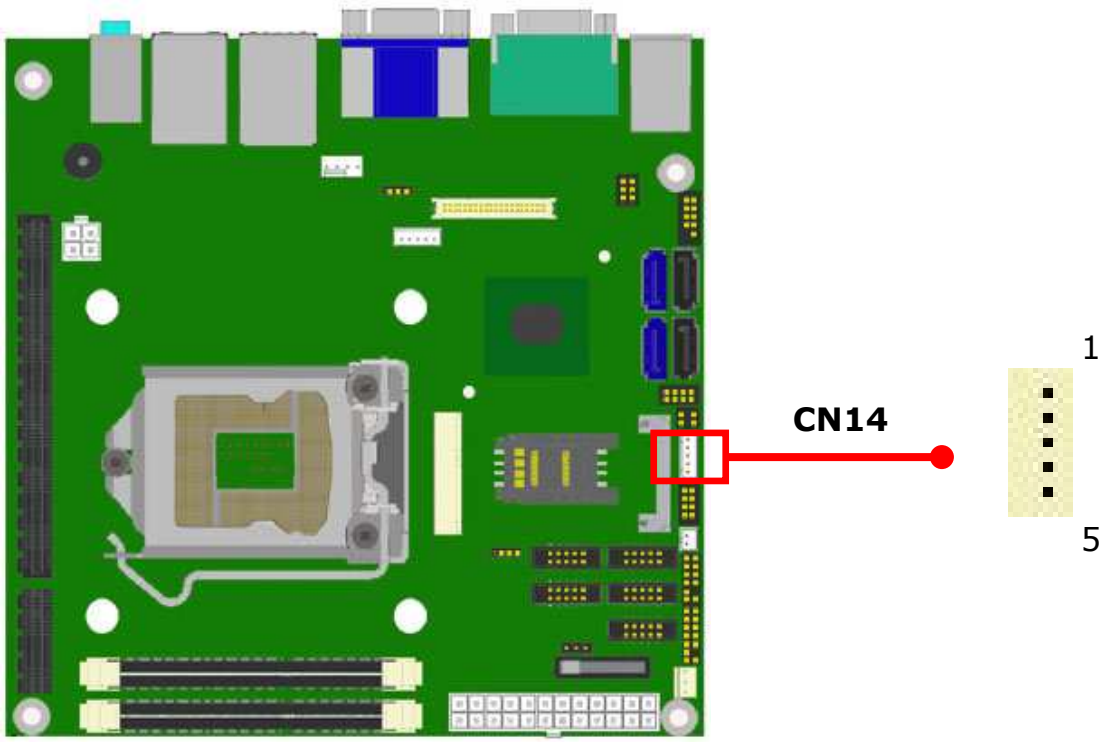
- 2.4.13 : CN13 for SIM holder

CN13 : SIM card holder			
Pin	**Signal**	**Pin**	**Signal**
C1	VCC	C2	RESET
C3	CLOCK	C4	Reserved
C5	GND	C6	VPP
C7	I/O	C8	Reserved



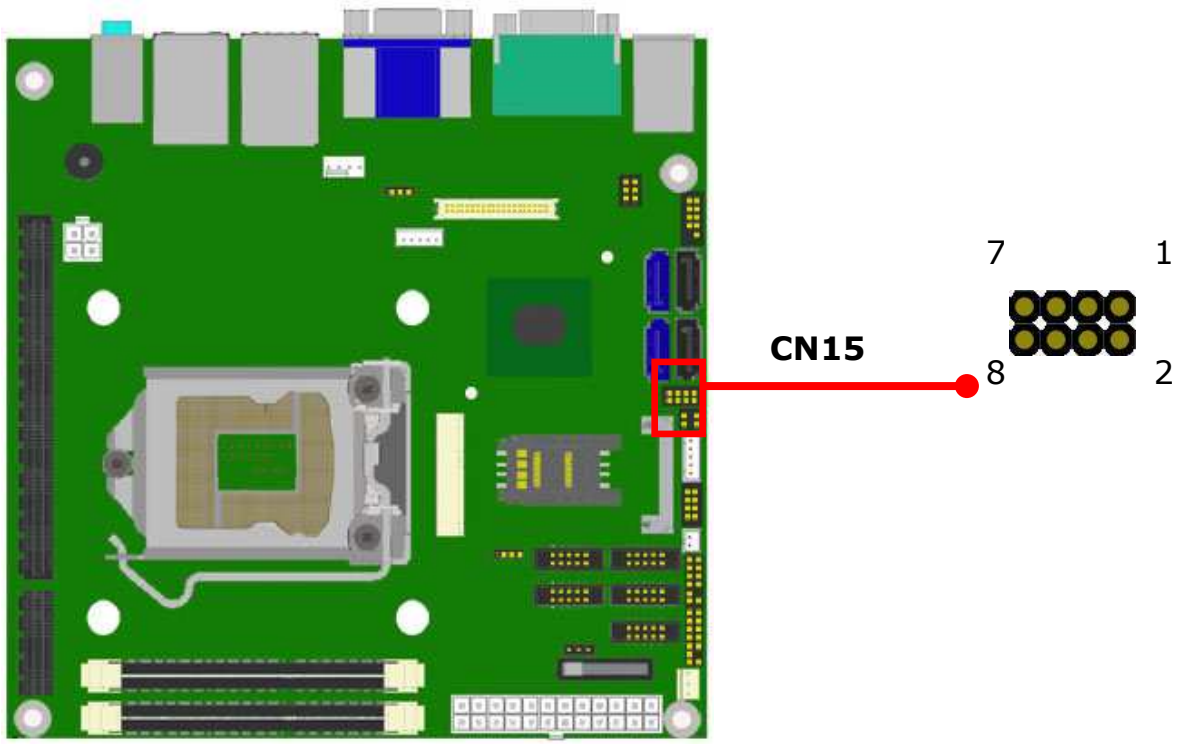
- 2.4.14 : CN14 for SMBUS pin header

CN14 : 1 x 5 pin header , 2.00 mm pitch			
Pin	**Signal**	**Pin**	**Signal**
1	+5V	2	Clock
3	Data	4	N/C
5	GND		



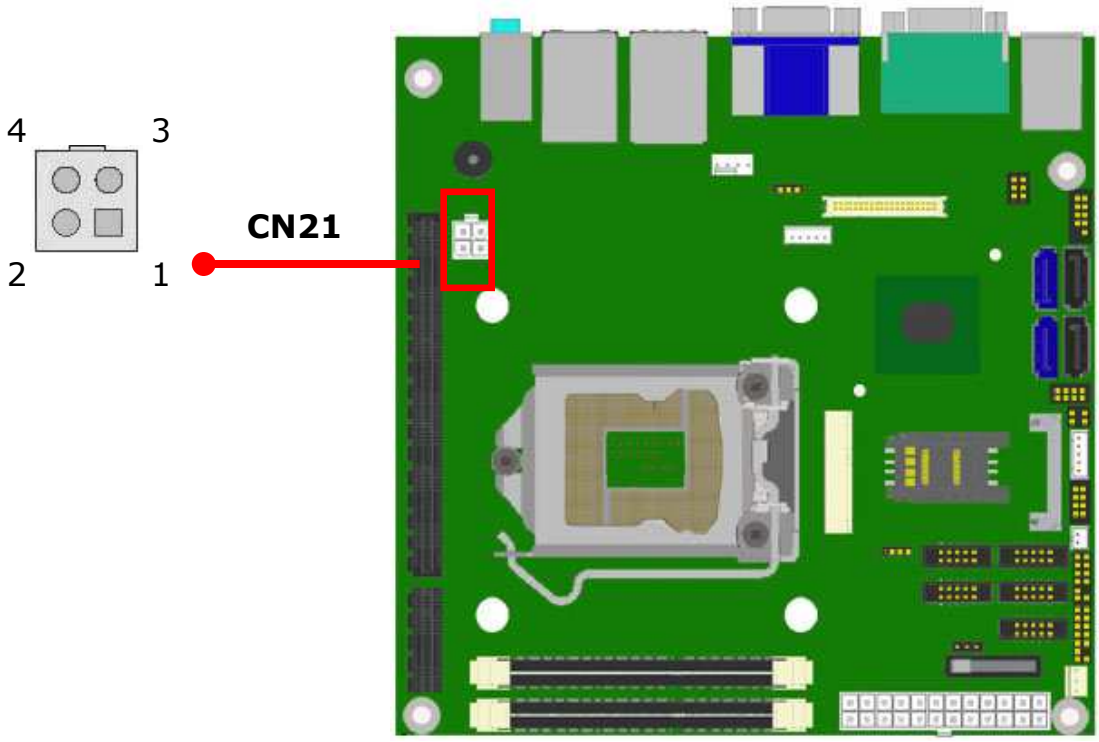
- 2.4.15 : CN15 for SPI programmer

CN15 : 2 x 4 header , pitch 2.54 mm			
Pin	**Signal**	**Pin**	**Signal**
1	+3.3V	2	GND
3	CS_N (Chip Select)	4	SCLK (Serial Clock)
5	MISO (Master Input, Slave Output)	6	MOSI (Master Output, Slave Input)
7	N/C	8	FLASH_IO



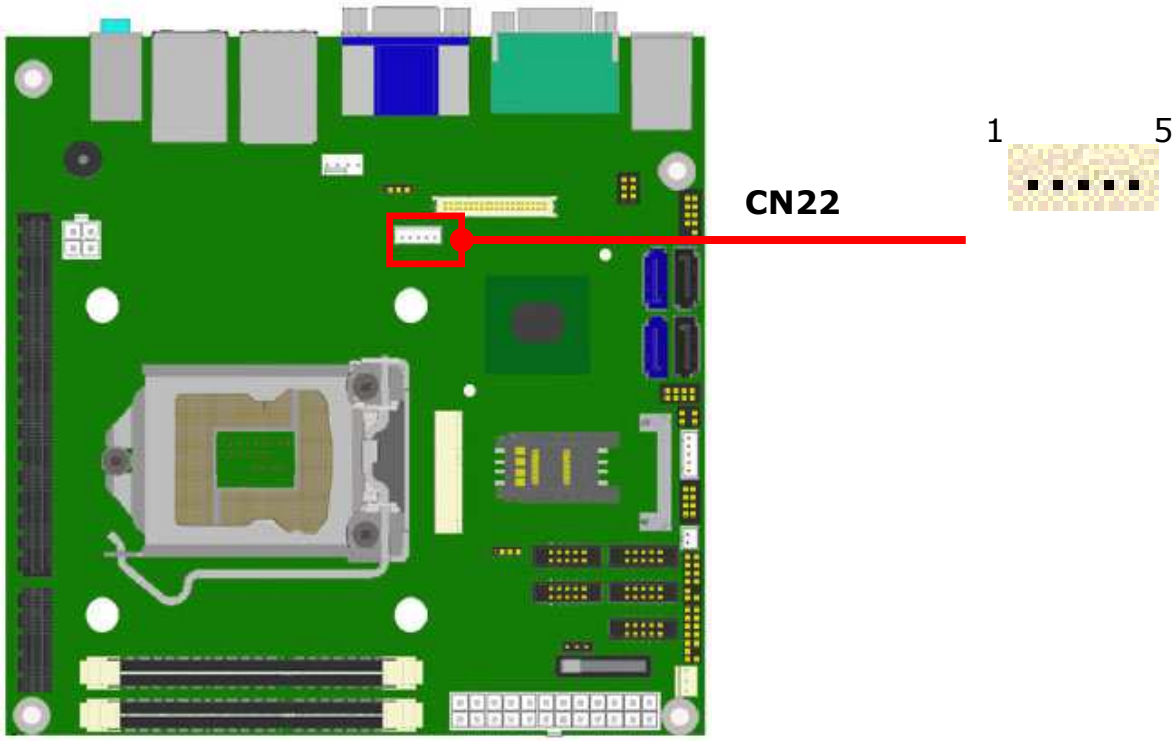
- 2.4.16 : CN21 for 4-pin 12V power input

CN21 : ATX 2 x 2			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	GND
3	12V	4	12V



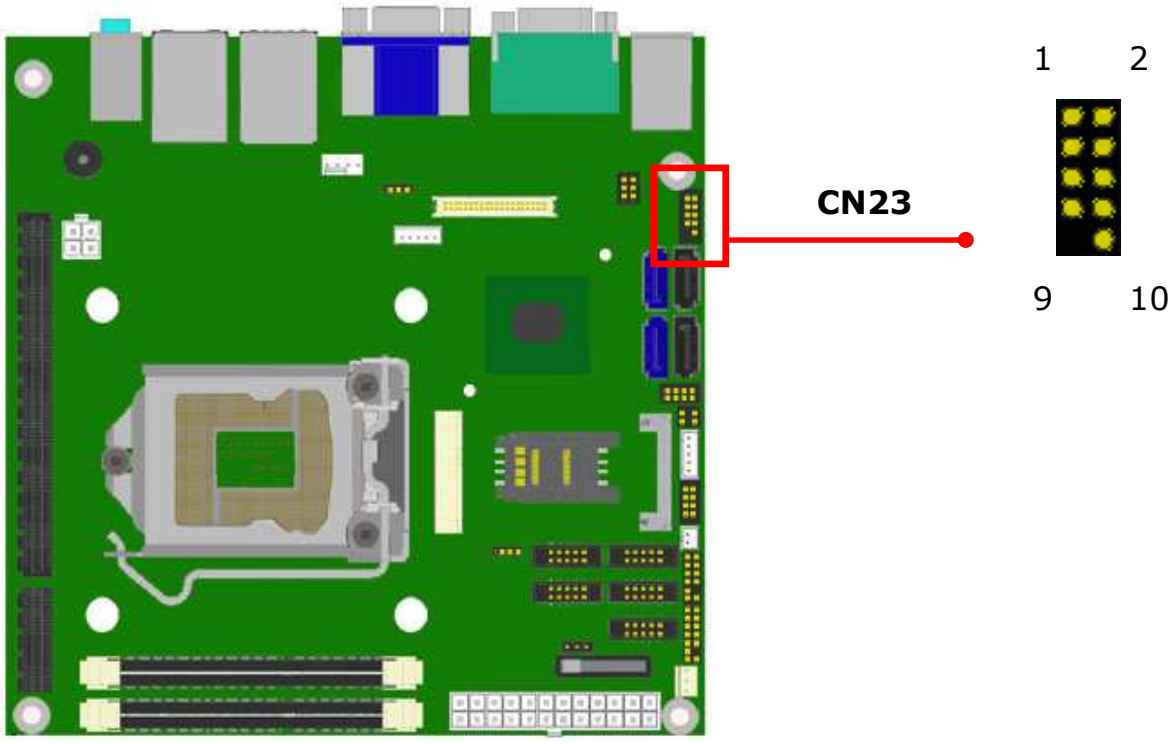
- 2.4.17 : CN22 for LVDS Backlight pin header

CN22: 1 x 5 wafer , Pitch : Pitch 2.0 mm			
Pin	**Signal**	**Pin**	**Signal**
1	+12V	2	GND
3	Backlight Enable	4	Backlight Control
5	+5V		



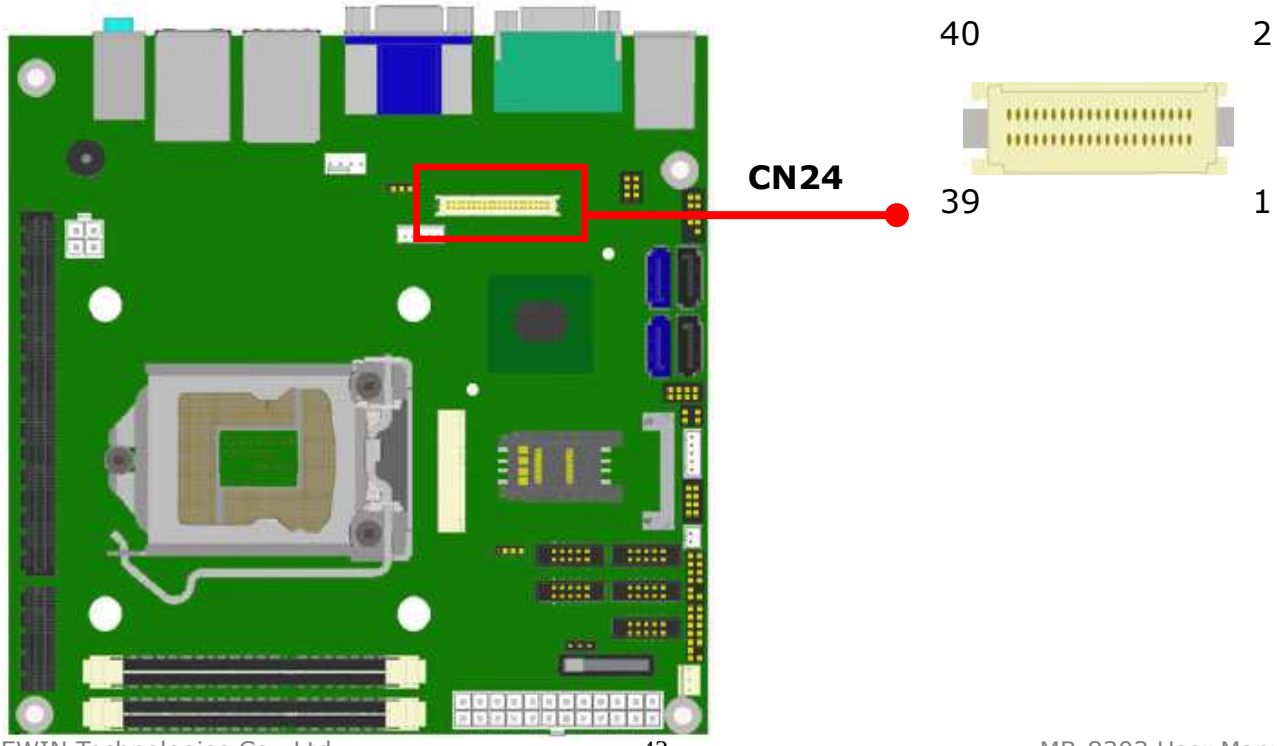
- 2.4.18 : CN23 for USB 2.0 pin header

CN23: 2 x 5 header , pitch 2.54 mm			
Pin	**Signal**	**Pin**	**Signal**
1	+5V	2	+5V
3	USB6_ data-	4	USB7_data-
5	USB6_ data+	6	USB7_data+
7	GND	8	GND
9	Key	10	GND



- 2.4.19 : CN24 for 24-bit Dual Channel LVDS

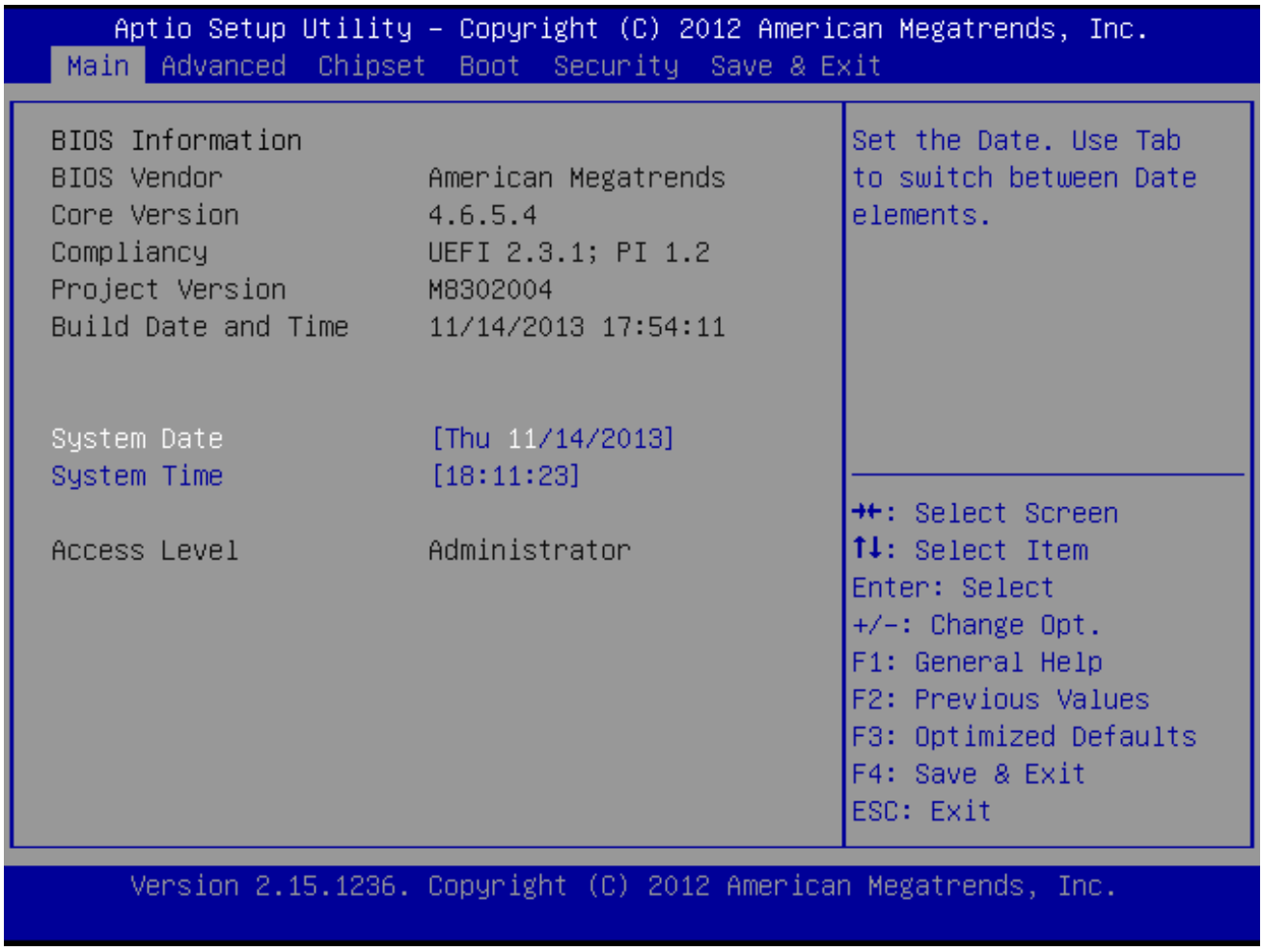
CN24 : connector type : DF13A-40DP-1.25V					
Pin	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**
1	LVDS_VCC	15	LVDSA_1+	29	GND
2	LVDS_VCC	16	LVDSB_1+	30	GND
3	LVDS_VCC	17	GND	31	DDC_Clock
4	LVDS_VCC	18	GND	32	DDC_Data
5	GND	19	LVDSA_2-	33	GND
6	GND	20	LVDSB_2-	34	GND
7	LVDSA_0-	21	LVDSA_2+	35	LVDSA_3-
8	LVDSB_0-	22	LVDSB_2+	36	LVDSB_3-
9	LVDSA_0+	23	GND	37	LVDSA_3+
10	LVDSB_0+	24	GND	38	LVDSB_3+
11	GND	25	LVDSA_Clock-	39	SMB_Clock
12	GND	26	LVDSB_Clock-	40	SMB_Data
13	LVDSA_1-	27	LVDSA_Clock+		
14	LVDSB_1-	28	LVDSB_Clock+		



3. BIOS setting Menu

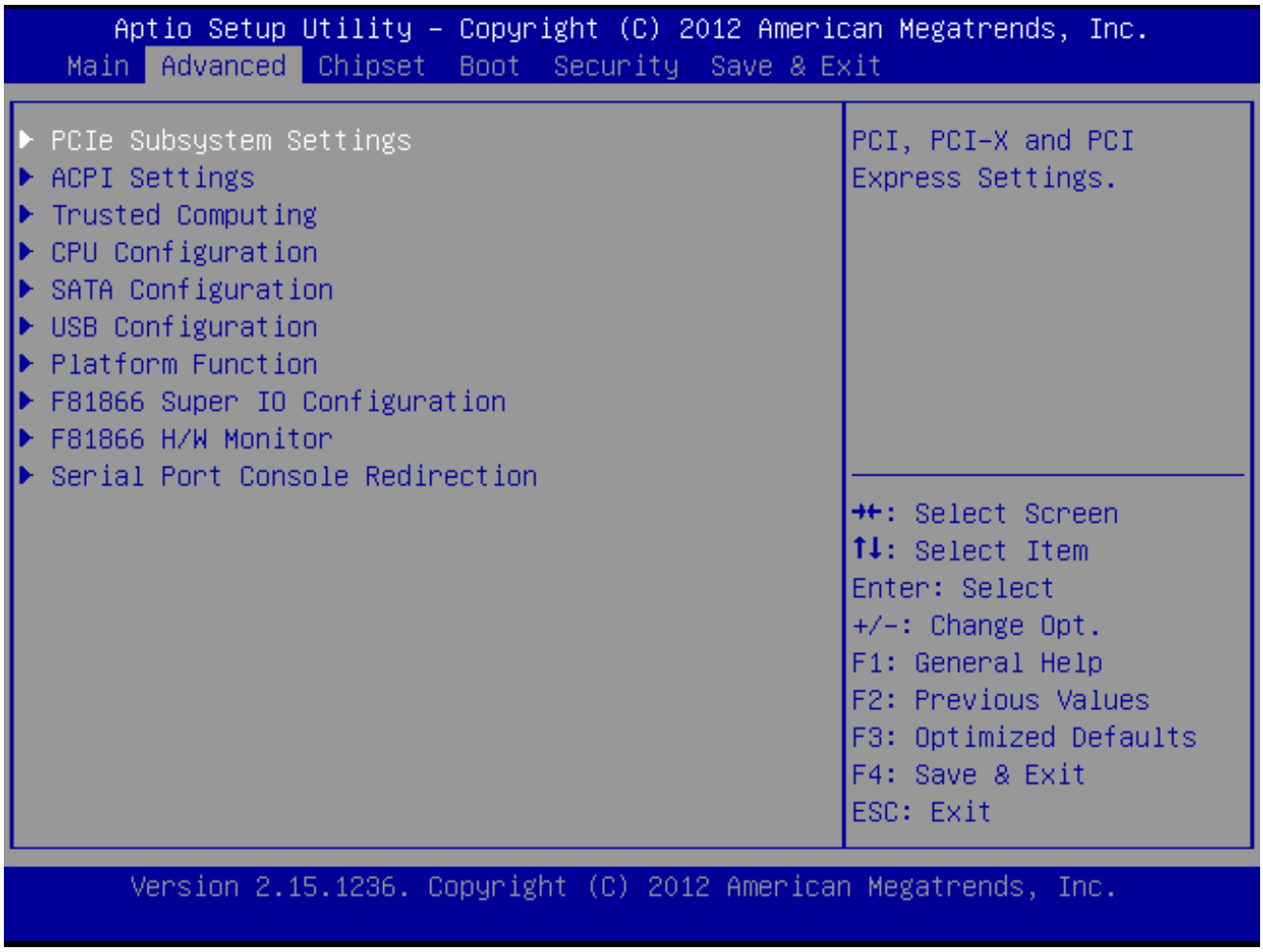
- 3.1 Main Menu

The Main Menu of BIOS Setup Utility provide a quick overview of basic system information and the ability to change the system Date, time ……..


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.4
Compliancy UEFI 2.3.1; PI 1.2
Project Version M8302004
Build Date and Time 11/14/2013 17:54:11
System Date [Thu 11/14/2013]
System Time [18:11:23]
Access Level Administrator
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2 Advanced Menu

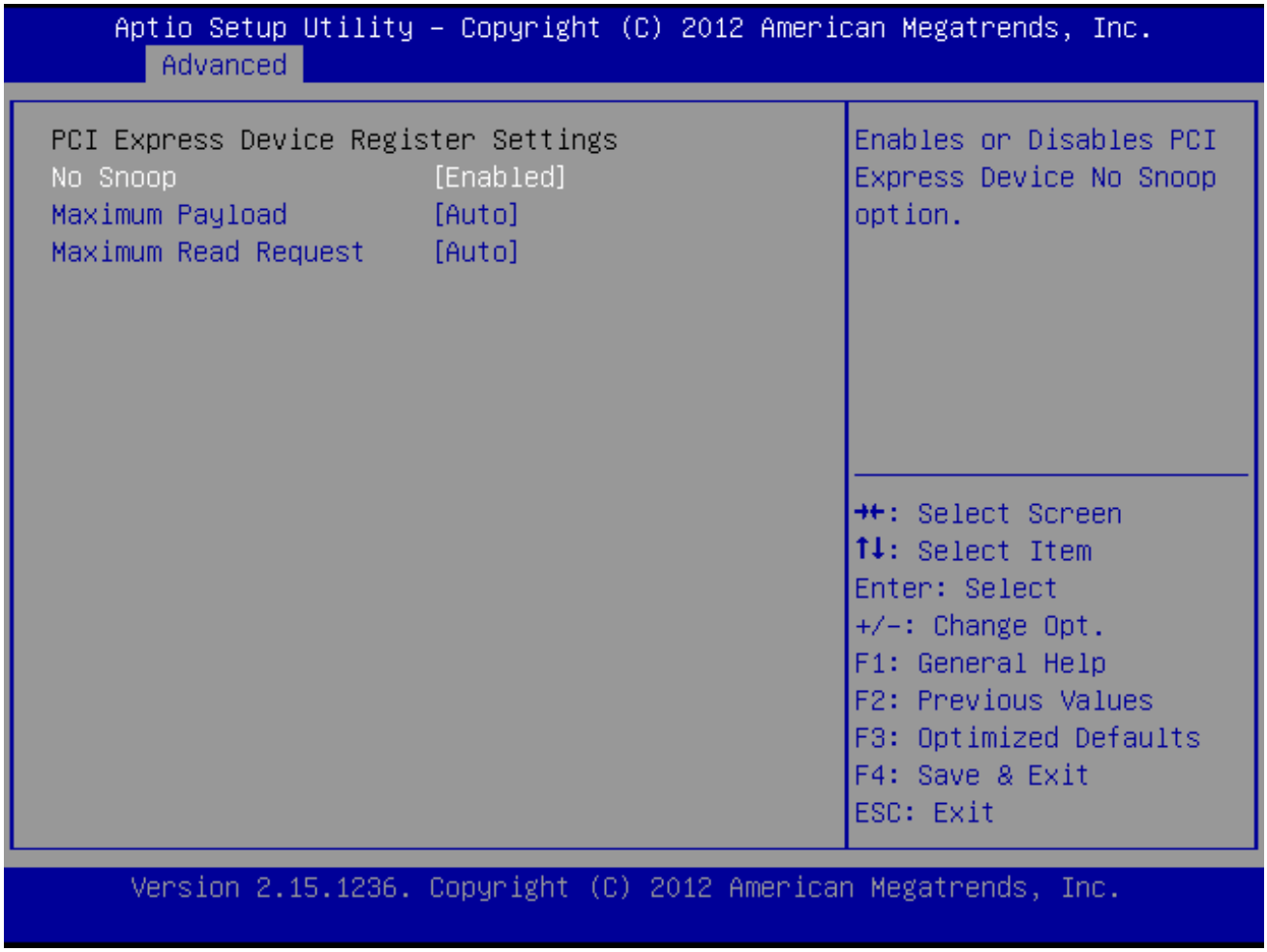
The Advanced Menu of BIOS Setup Utility allows users to configure advanced system settings.



- 3.2.1 Advanced Menu

PCI Express Device Register Setting:

Description: This item manually sets the maximum read request size of the PCI Express device or allows the system BIOS to choose the value (Auto). The options are Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes and 4096 Bytes.

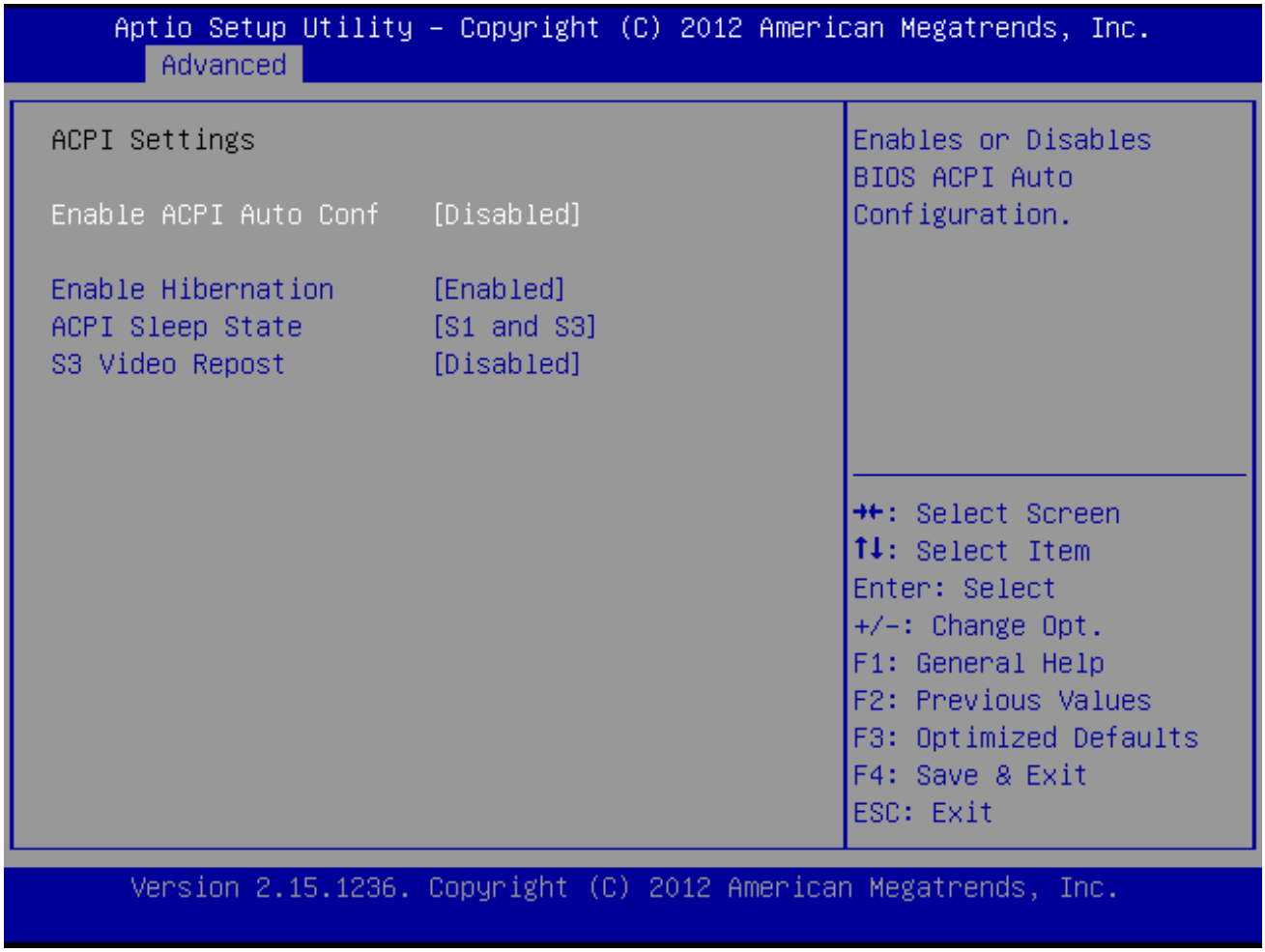

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
PCI Express Device Register Settings
No Snoop [Enabled]
Maximum Payload [Auto]
Maximum Read Request [Auto]
Enables or Disables PCI Express Device No Snoop option.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.2 Advanced Menu

ACPI Setting:

Enable ACPI Auto Configuration < Disable >

Description : Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

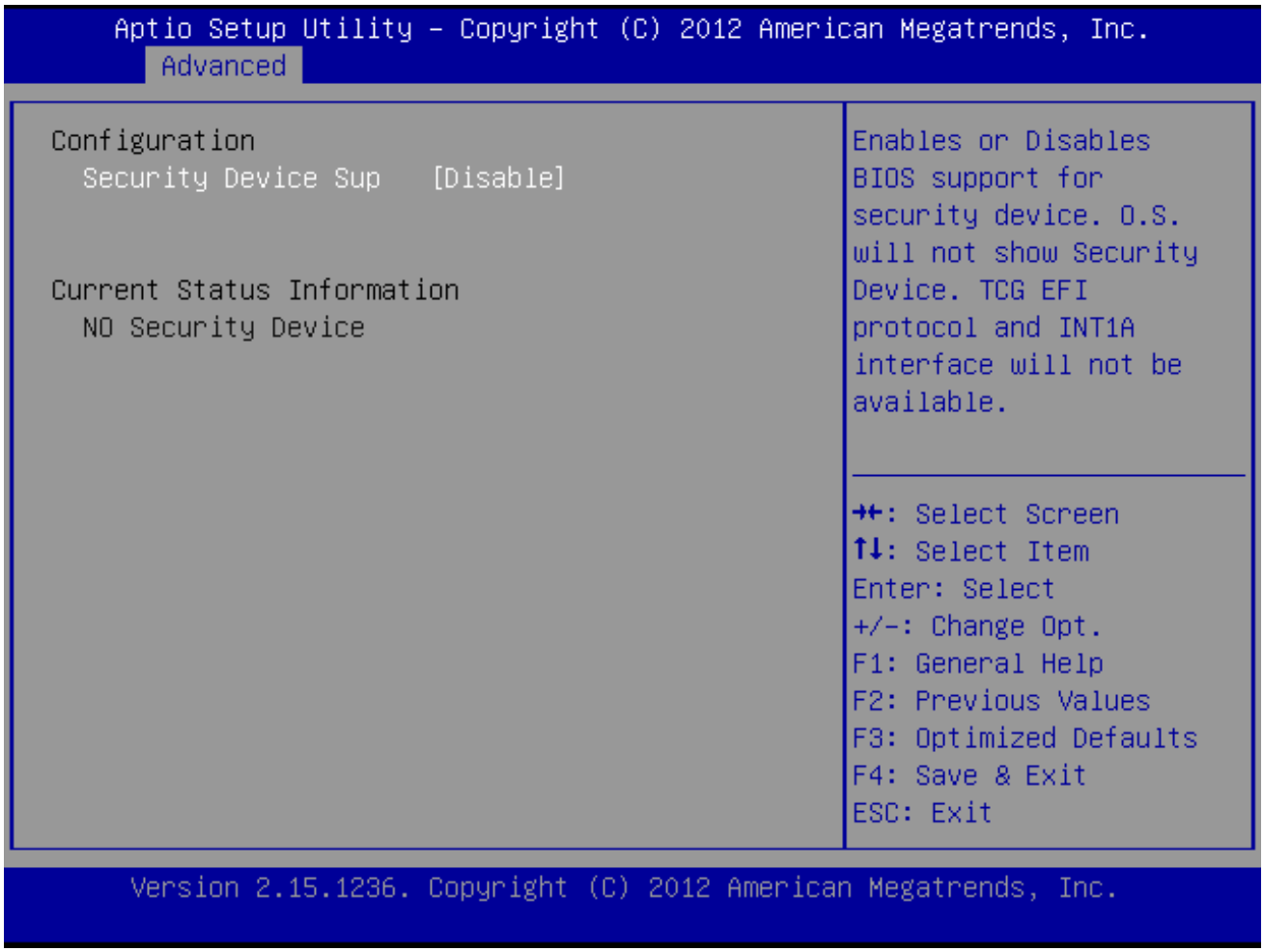

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
ACPI Settings
Enable ACPI Auto Conf [Disabled]
Enable Hibernation [Enabled]
ACPI Sleep State [S1 and S3]
S3 Video Repost [Disabled]
Enables or Disables BIOS ACPI Auto Configuration.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.3 Advanced Menu

Trusted Computing:

Security Device Support *< Disable >*

Description : Select Enabled to activate support for trusted platforms (TPM 1.1/1.2) and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Disable and Enable.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Configuration
Security Device Sup [Disable]
Current Status Information
NO Security Device
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.4 Advanced Menu

CPU Configuration:

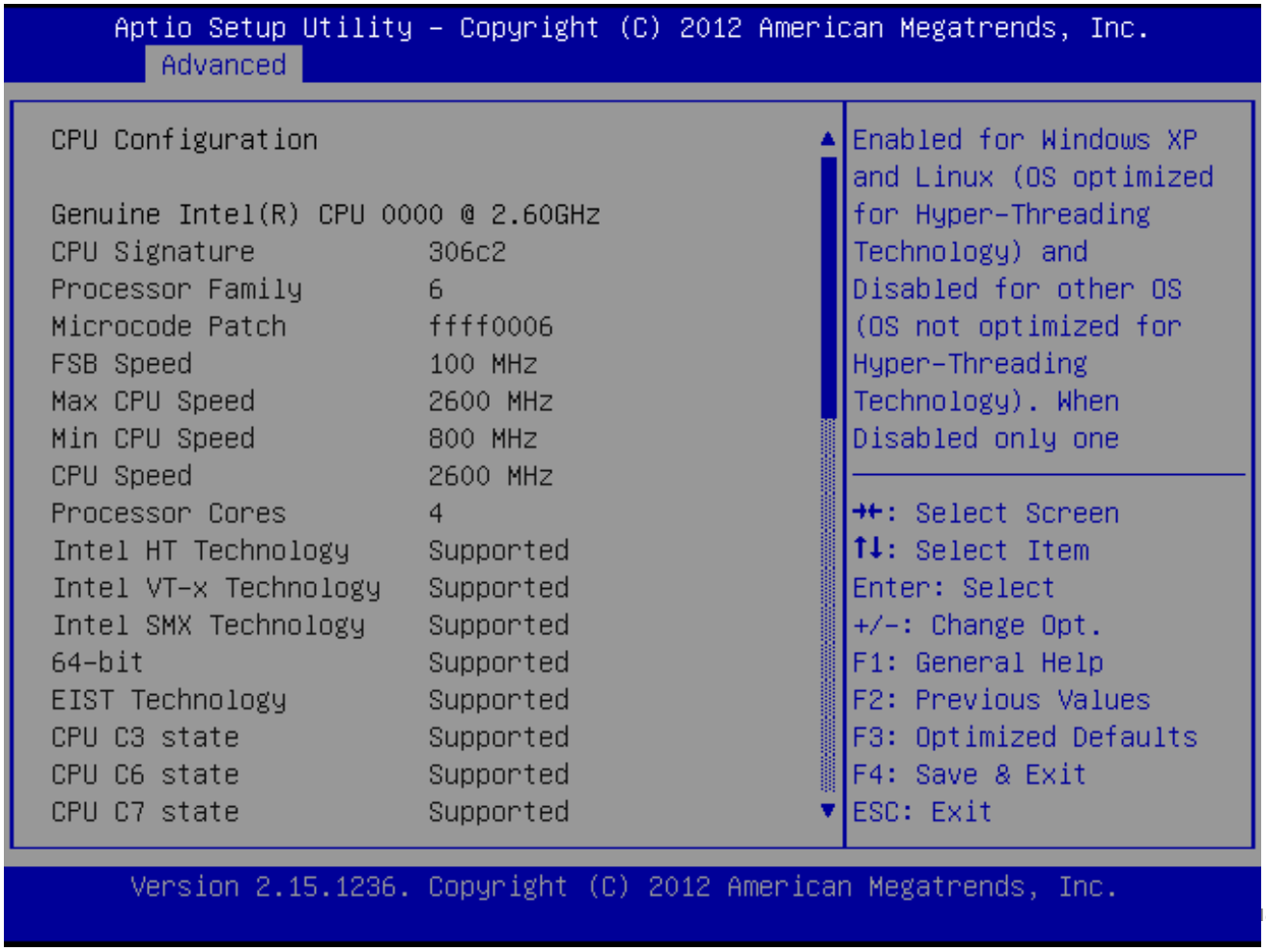
This item displays the current CPU Revision, Current CPU1 Memory Frequency, Memory Type and Memory Reference Code Revision.

Hyper-threading :

Intel® Hyper Threading Technology (Available when supported by the OS and the CPU). Select Enabled to enable Hyper_Threading support to increase CPU performance. The options are Enabled and Disabled.

Active Processor Cores :

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are All, l, 2 and 3.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
CPU Configuration
Genuine Intel(R) CPU 0000 @ 2.60GHz
CPU Signature 306c2
Processor Family 6
Microcode Patch ffff0006
FSB Speed 100 MHz
Max CPU Speed 2600 MHz
Min CPU Speed 800 MHz
CPU Speed 2600 MHz
Processor Cores 4
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Supported
64-bit Supported
EIST Technology Supported
CPU C3 state Supported
CPU C6 state Supported
CPU C7 state Supported
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

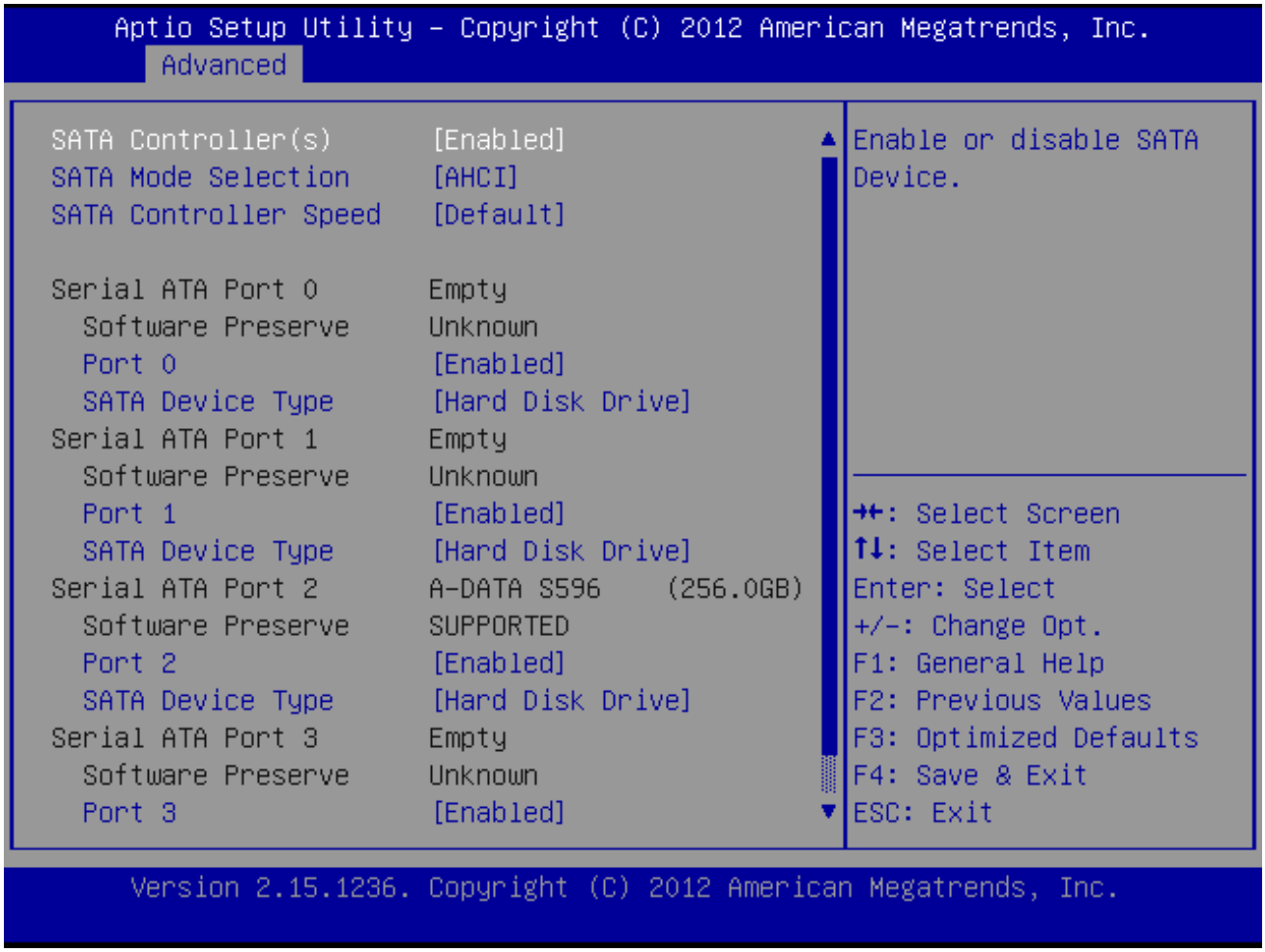
- 3.2.5 Advanced Menu

SATA Configuration:

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE Devices and displays the following items:

SATA Mode Selection :

This item selects the mode for the installed drives. The options are Disabled, IDE Mode, AHCI Mode and RAID Mode.

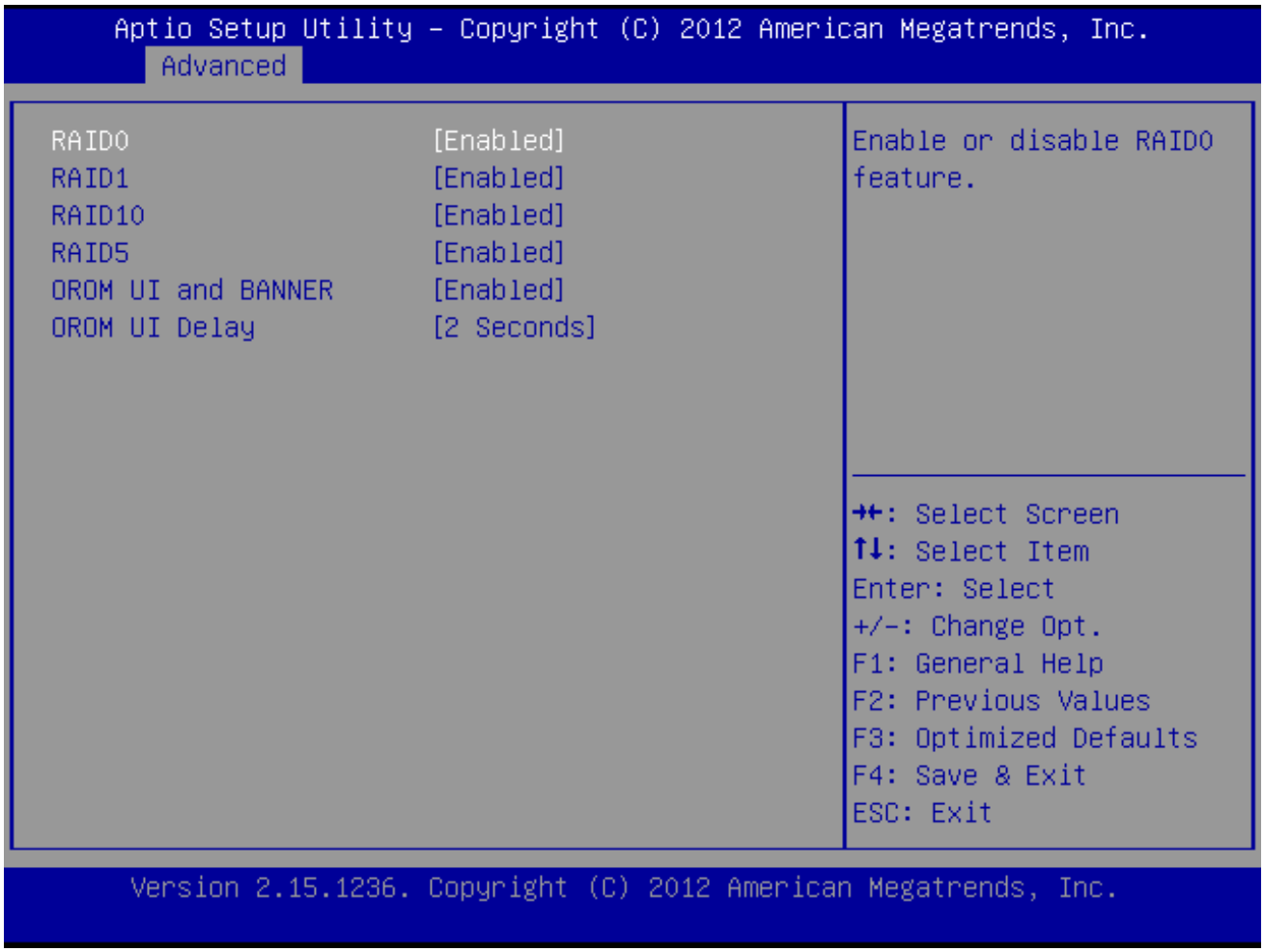

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
SATA Controller Speed [Default]
Serial ATA Port 0 Empty
Software Preserve Unknown
Port 0 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 1 Empty
Software Preserve Unknown
Port 1 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 2 A-DATA S596 (256.0GB)
Software Preserve SUPPORTED
Port 2 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 3 Empty
Software Preserve Unknown
Port 3 [Enabled]
Enable or disable SATA Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.6 Advanced Menu

Intel® Rapid Start Technology:	< Disabled >

Description : Intel® Rapid Start Technology enables your system to get up and running faster from even the deepest sleep, saving time and power consumption.

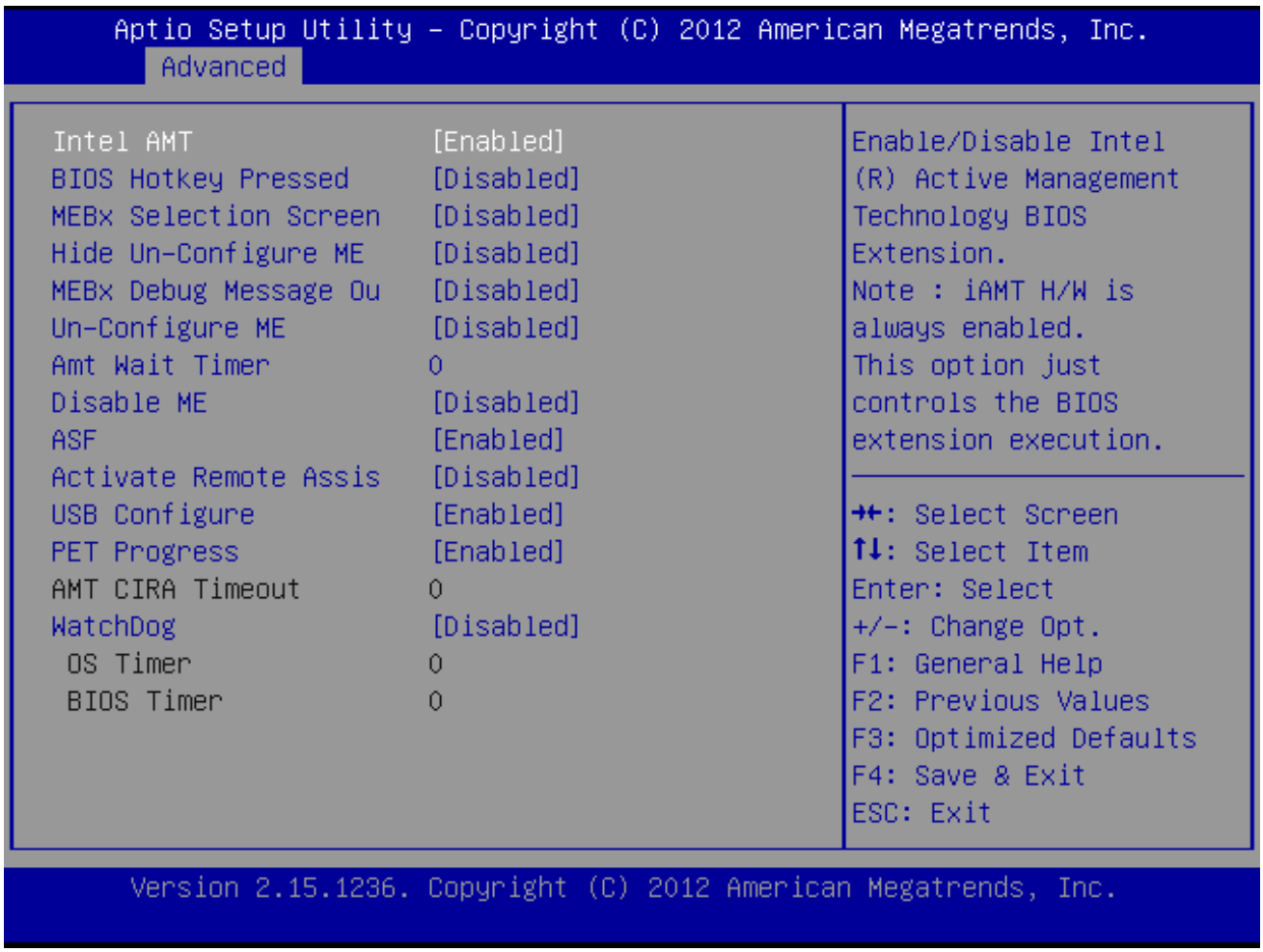
Note : This function for MB-8303B only



- 3.2.6 Advanced Menu

Intel® AMT: < Enabled >

Description : This option enables Intel AMT support. The options are Enabled and Disabled..



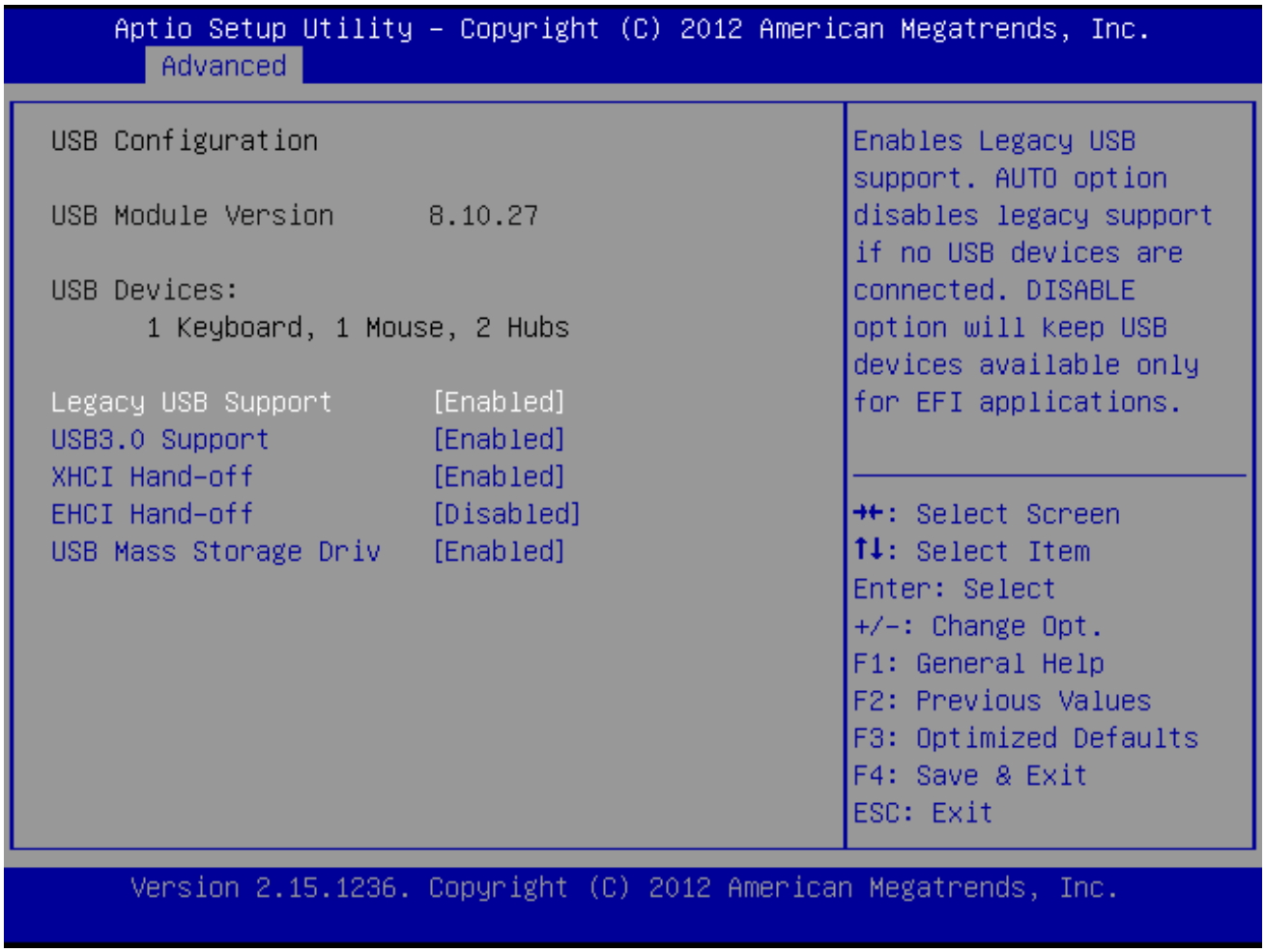
- 3.2.6 Advanced Menu

USB Configuration:

This feature enables support for USB function parameters The options are Enabled, and Disabled.

Legacy USB Support:

This feature enables support for legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disable to have USB devices available only for EFl applications. The options are Enabled, Disabled and Auto.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Configuration
USB Module Version 8.10.27
USB Devices:
1 Keyboard, 1 Mouse, 2 Hubs
Legacy USB Support [Enabled]
USB3.0 Support [Enabled]
XHCI Hand-off [Enabled]
EHCI Hand-off [Disabled]
USB Mass Storage Driv [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.6 Advanced Menu

SATA PCIE select:

Select Half-size Mini-PCIe socket to support SATA signal or PCIe signal.

Default is support STAT signal

COM2 port mode:

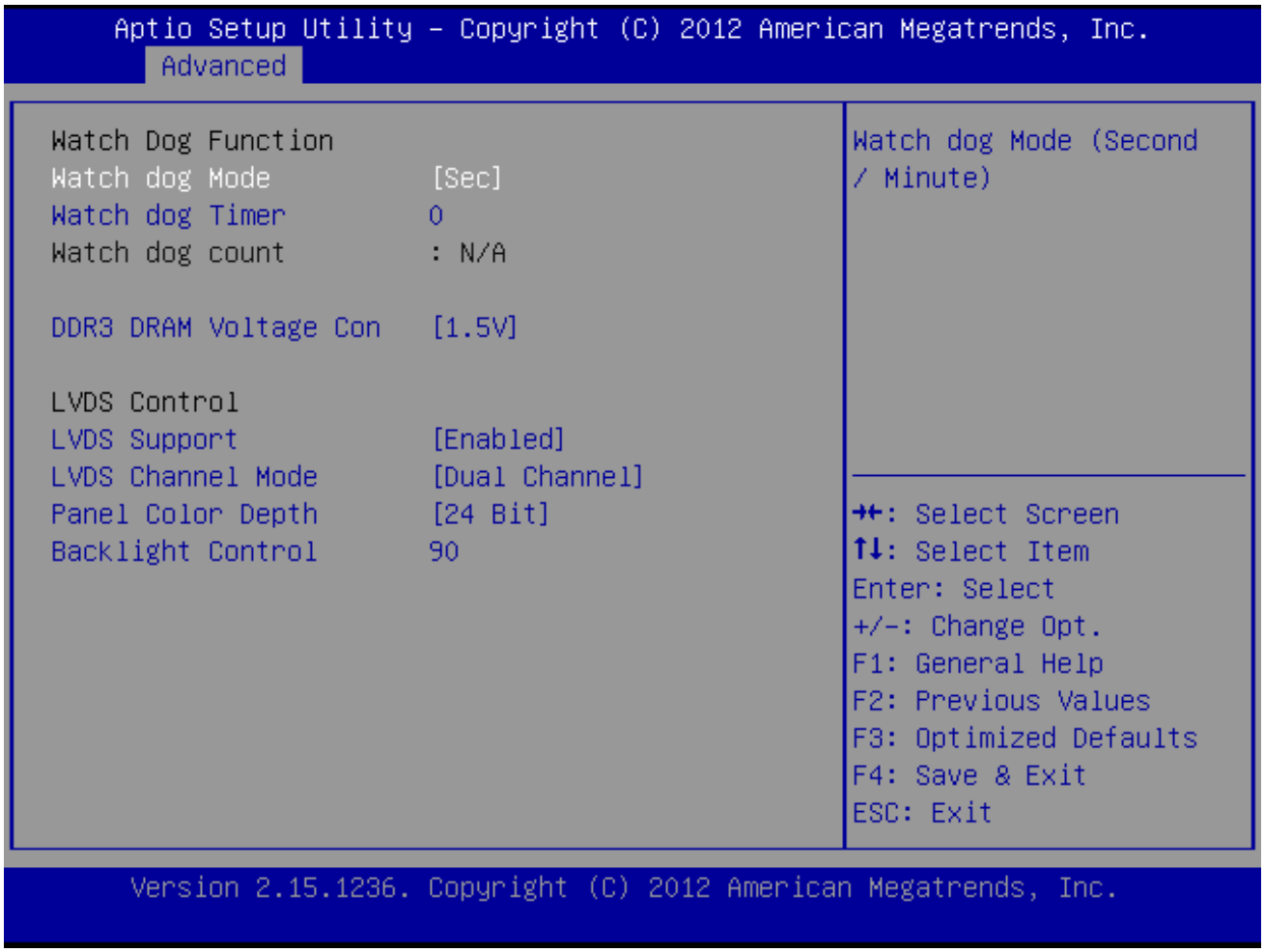
Select COM2 port to support RS232 , RS-422 or RS485 mode.

Default is RS232 mode

Watch Dog Function:

Allows AMT to reset or power down the system if the operating system or BIOS hangs or crashes.

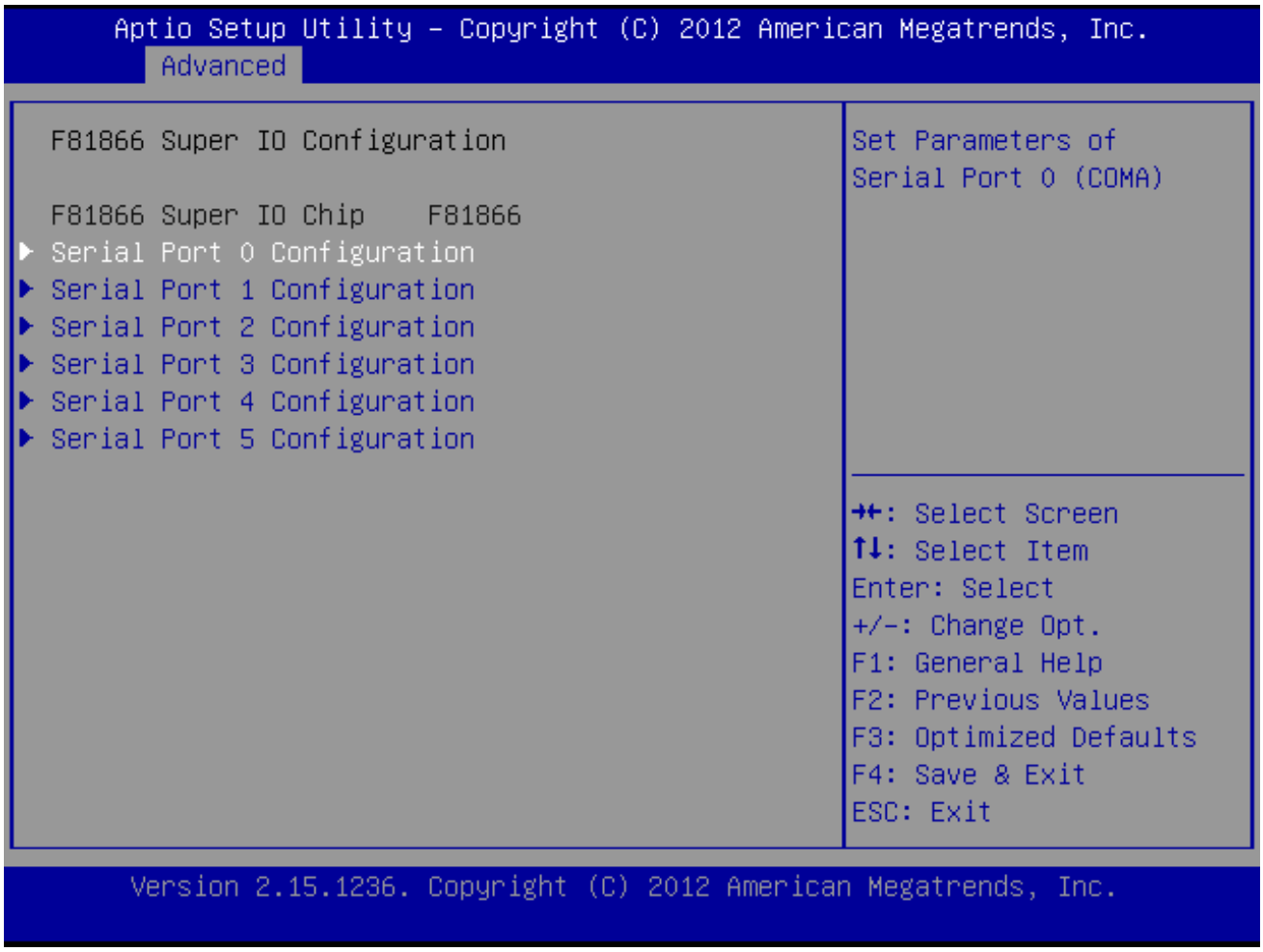
The options are Disabled, and Enabled.



- 3.2.6 Advanced Menu

F81866 Super IO Configuration:

Description : Select Enabled to enable the onboard serial port. The options are Enabled and Disabled.

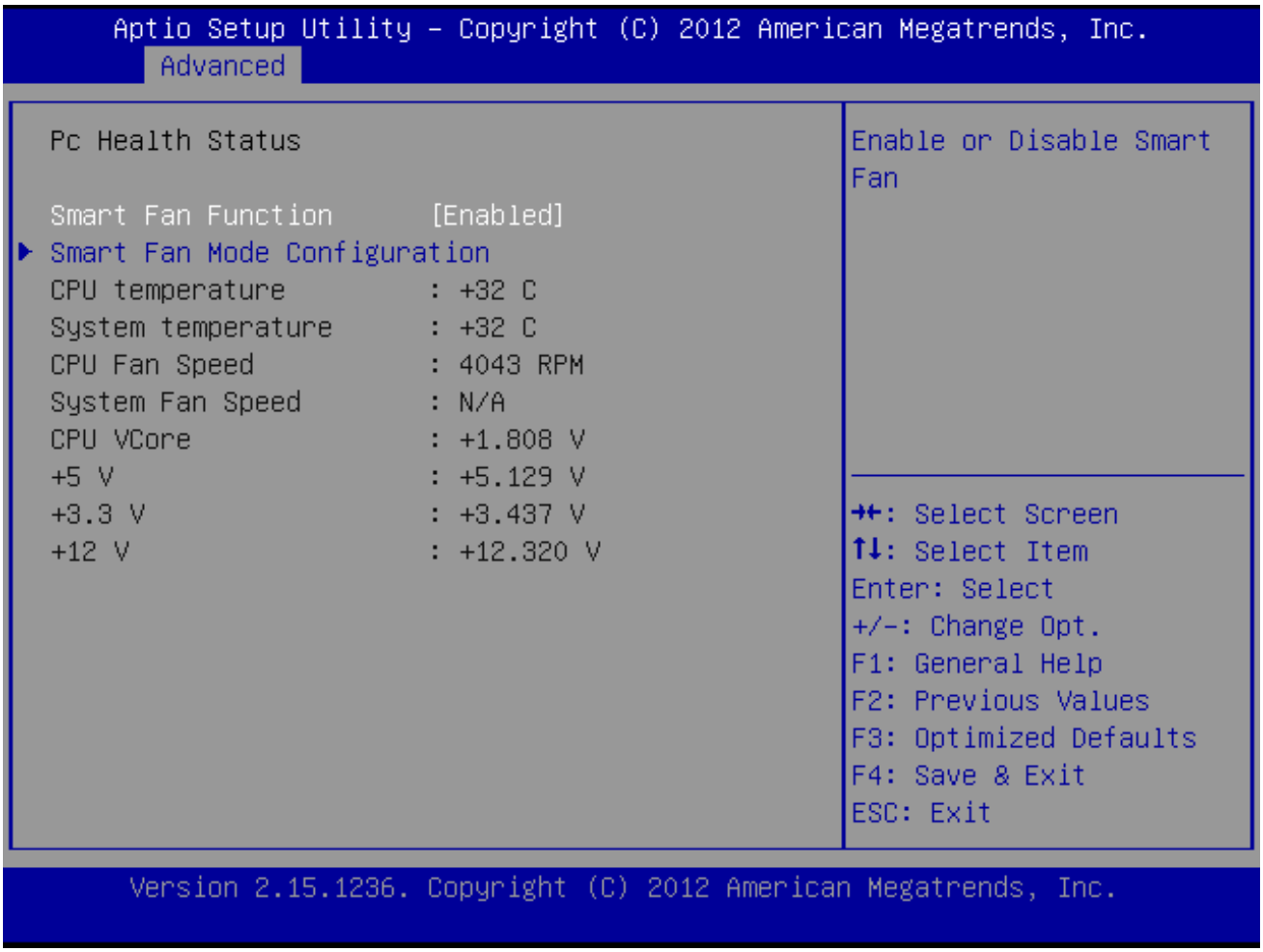

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
F81866 Super IO Configuration
F81866 Super IO Chip F81866
Serial Port 0 Configuration
Serial Port 1 Configuration
Serial Port 2 Configuration
Serial Port 3 Configuration
Serial Port 4 Configuration
Serial Port 5 Configuration
Set Parameters of Serial Port 0 (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.7 Advanced Menu

F81866 H/W monitor:

Smart Fan Mode Configuration *< Enabled/Disabled >*

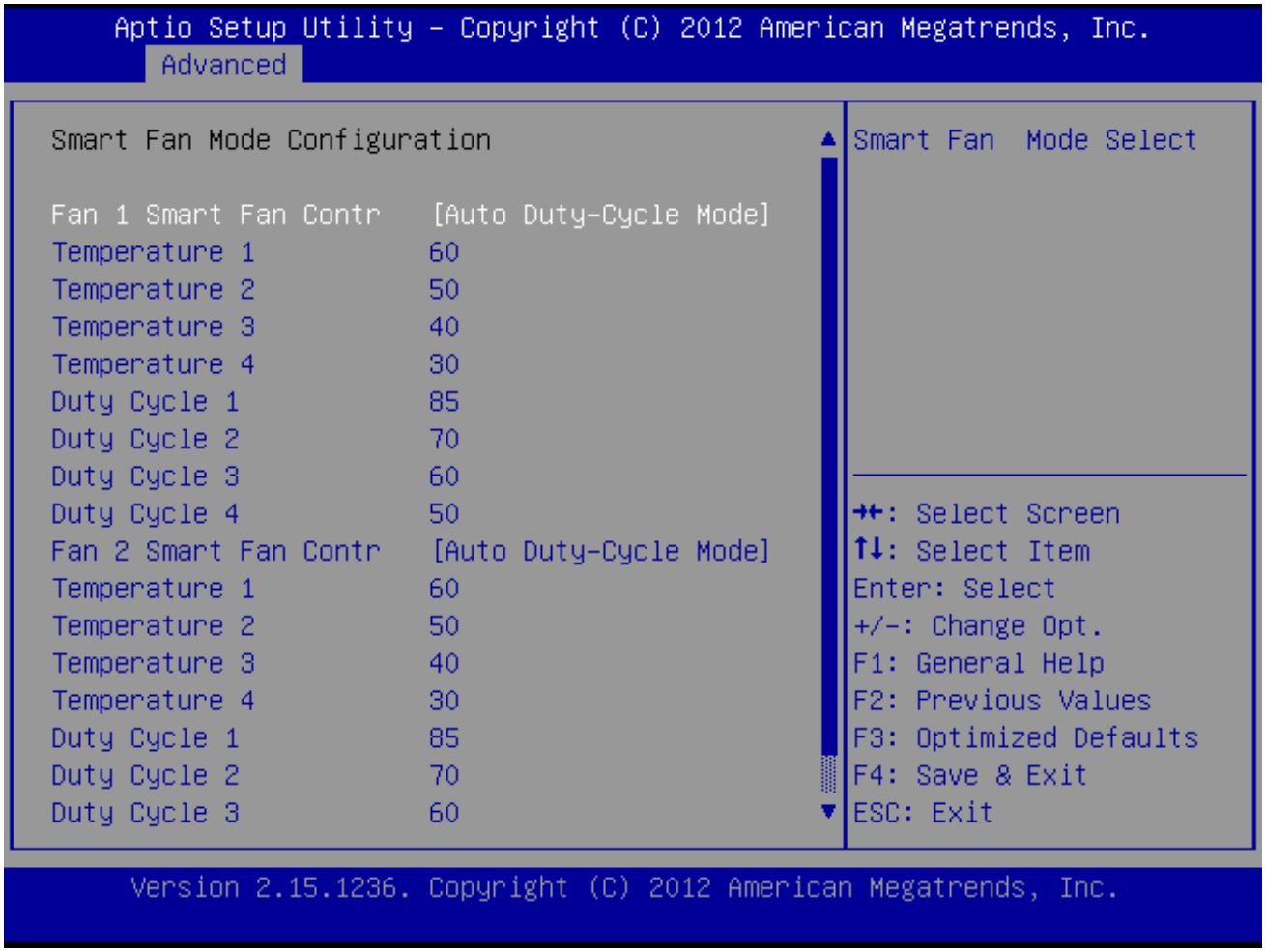
Description : This feature allows the user to check CPU temperature and the fan speed. And also displays the current voltages of the above voltage monitors


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan Function [Enabled]
Smart Fan Mode Configuration
CPU temperature : +32 C
System temperature : +32 C
CPU Fan Speed : 4043 RPM
System Fan Speed : N/A
CPU VCore : +1.808 V
+5 V : +5.129 V
+3.3 V : +3.437 V
+12 V : +12.320 V
Enable or Disable Smart Fan
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.2.8 Advanced Menu

Smart Fan Mode Configuration

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling.



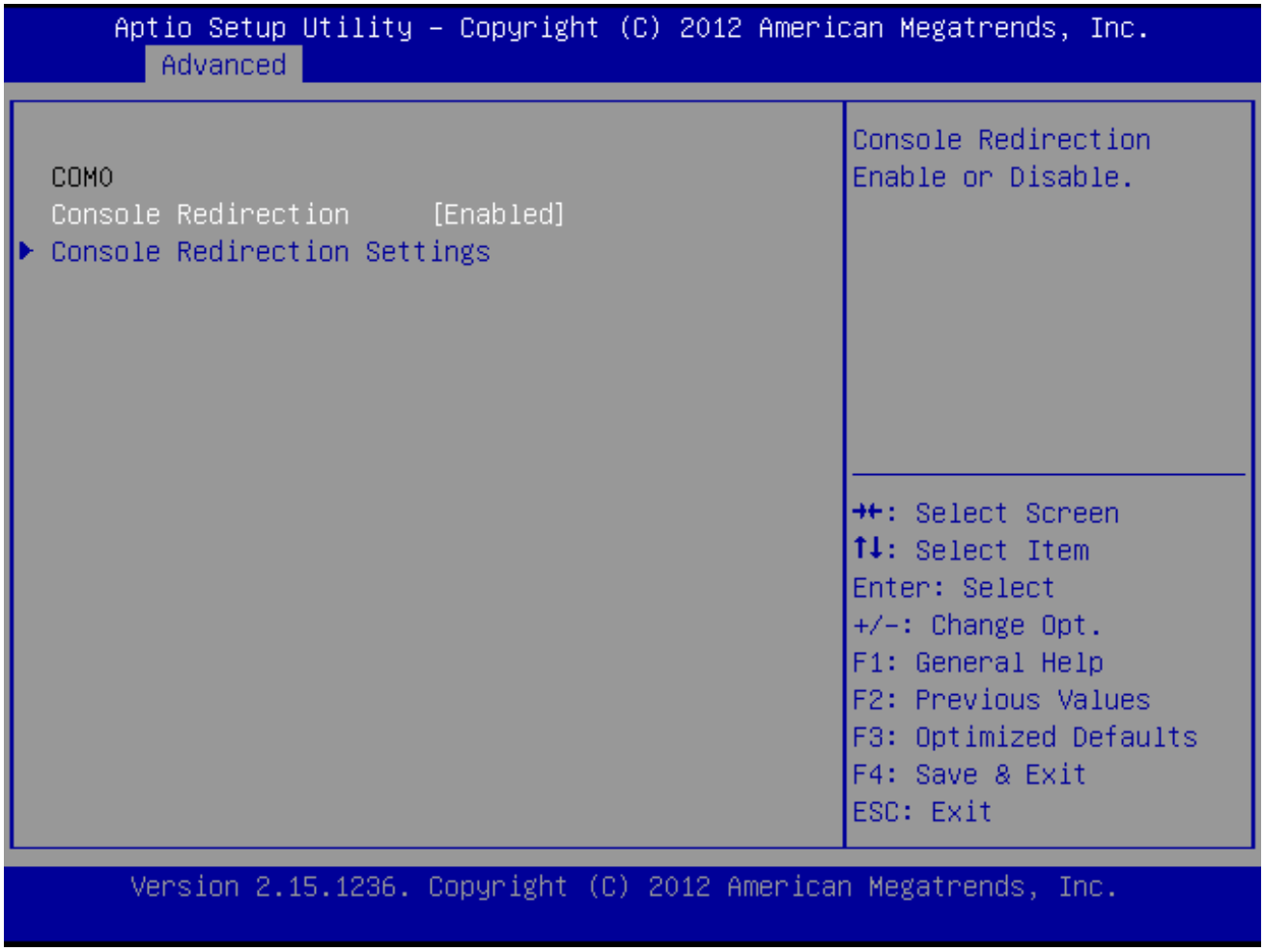
- 3.2.10 Advanced Menu

Serial Port Console Redirection

Console Redirection < Enable >

Description : This feature allows the user to remotely access the entire boot sequence via a serial console

Default setting is Enable



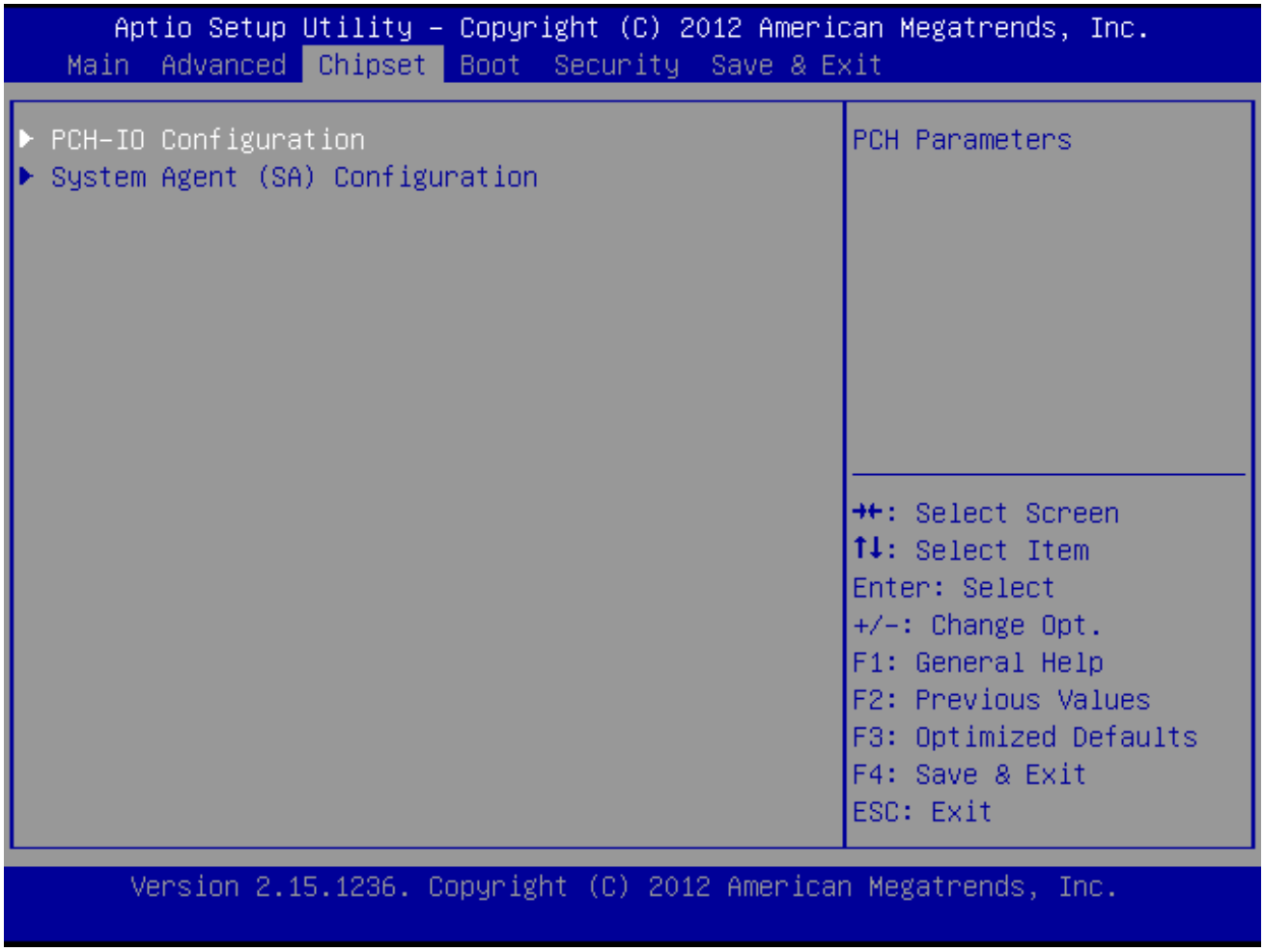
- 3.3 Chipset Menu

Chipset

PCH-IO Configuration

System Agent (SA) Configuration

Description : This section allows the user to change PCH-IO setting


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
PCH-IO Configuration
System Agent (SA) Configuration
PCH Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.3.1 Chipset Menu

PCH LAN Controller :

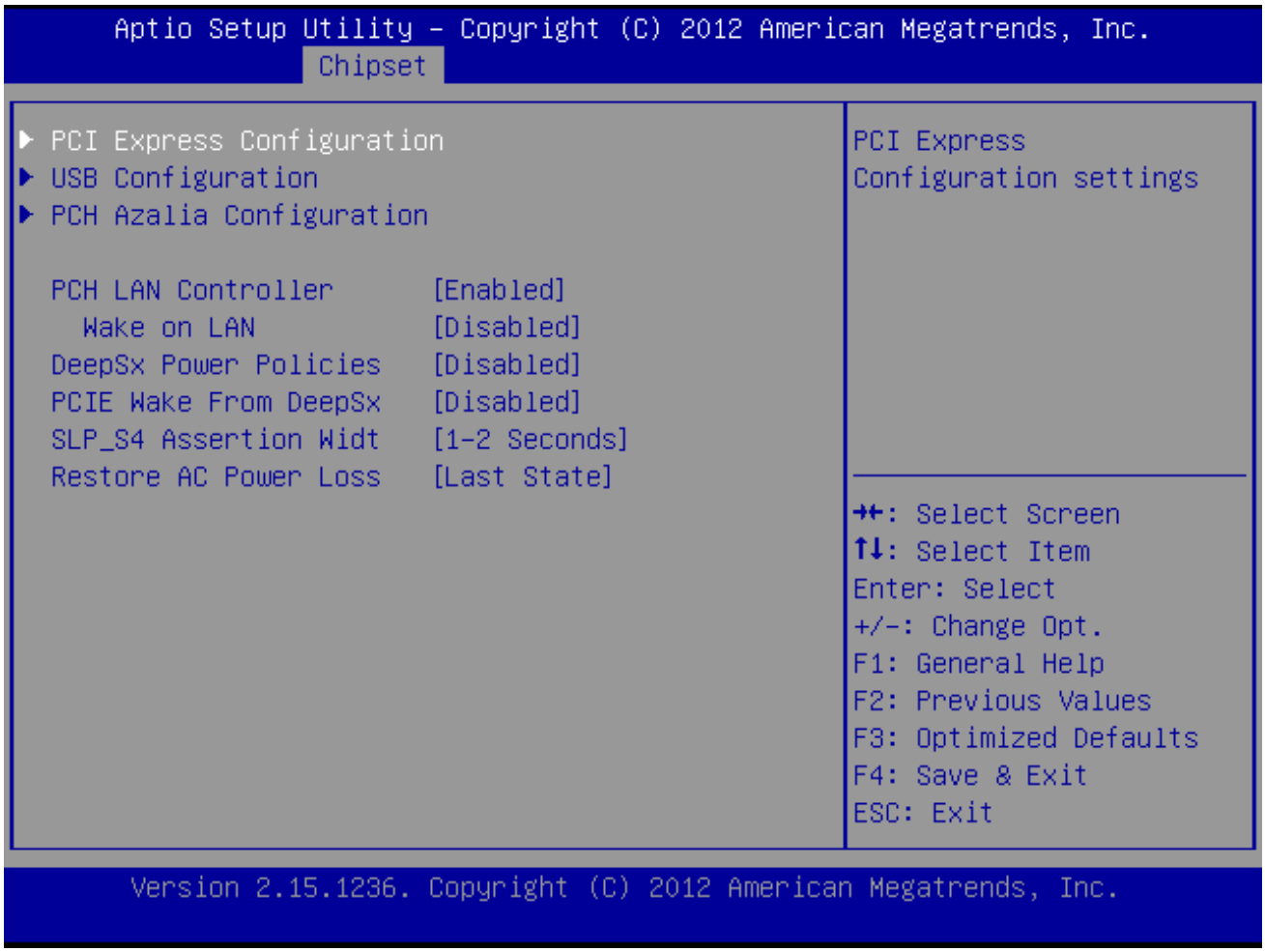
Select Enabled to enable the onboard gigabit Ethernet controller. The settings are Enabled and Disabled

Wake on LAN :

Select Enabled to enable the capability to 'wake-up' the system from the S5~power state (Soft Off State) through the Ethernet controller. The settings are Enabled and Disabled.

Restore AC Power Loss :

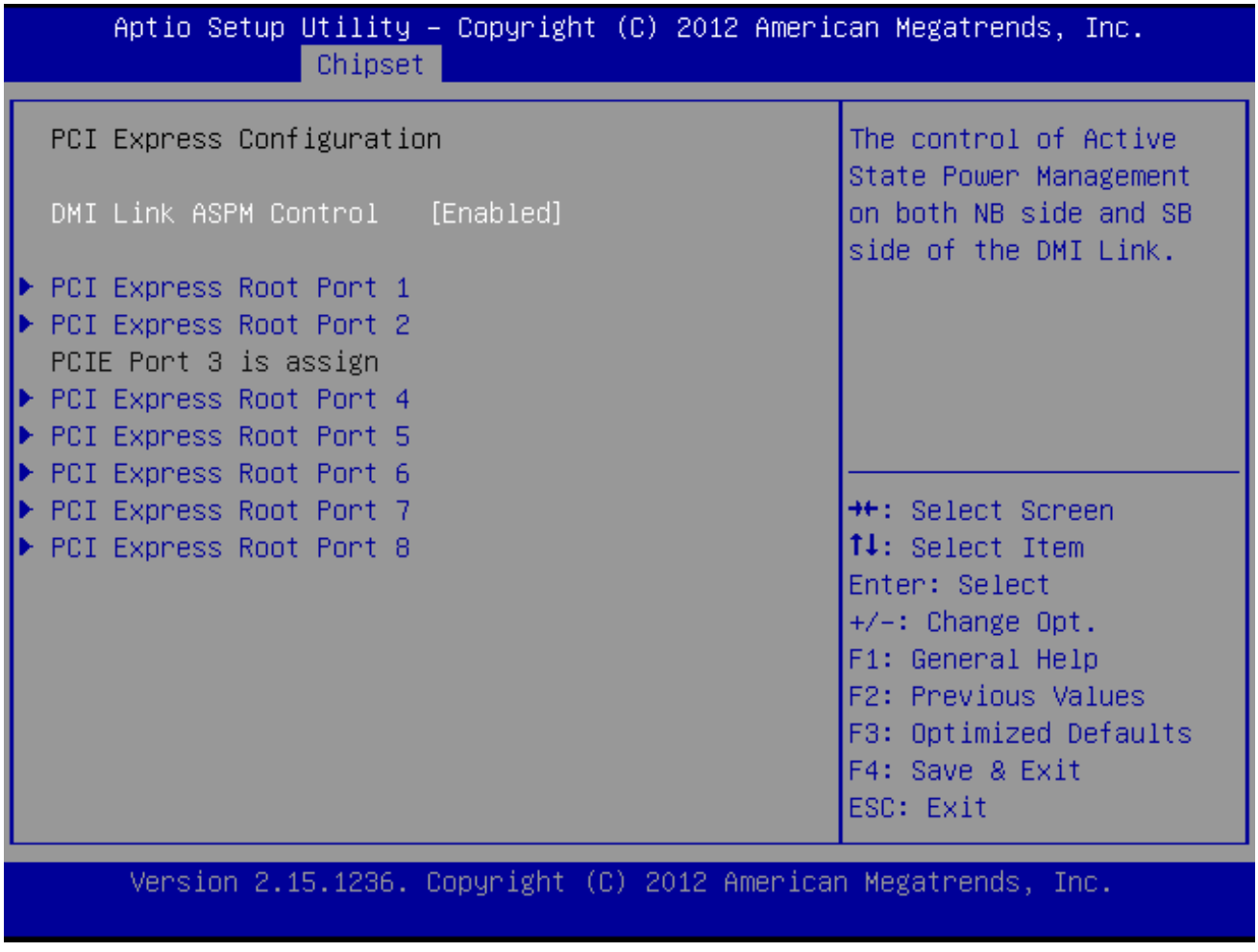
Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its' last power state before a power lost. The options are Power-On, Power-Off and Last State.



- 3.3.2 Chipset Menu

PCI Express Configuration:

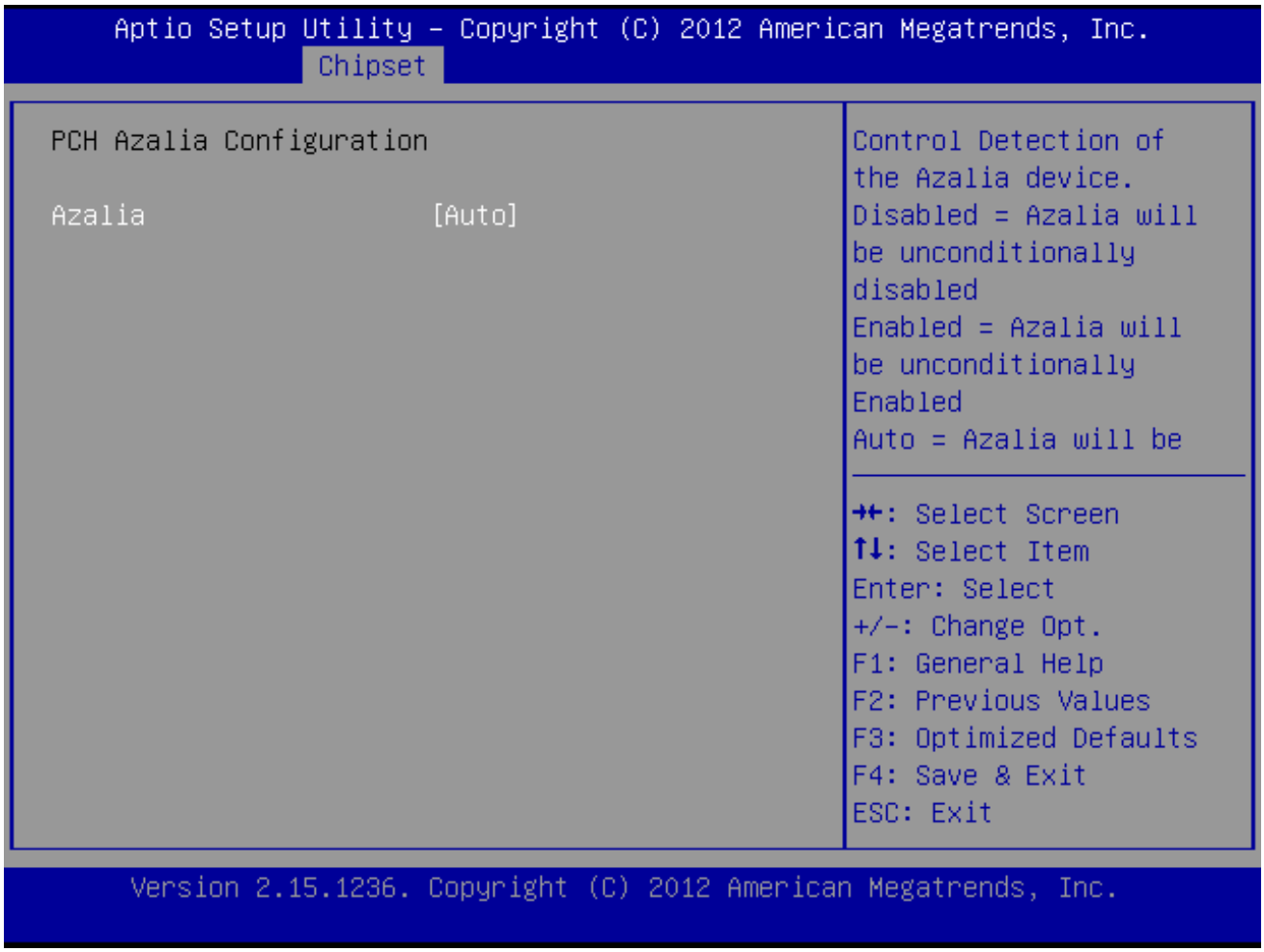
Description: Use this feature to enable or disable PCIe slot Option ROMs. The options are Disabled and Enabled.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
PCI Express Configuration
DMI Link ASPM Control [Enabled]
PCI Express Root Port 1
PCI Express Root Port 2
PCIE Port 3 is assign
PCI Express Root Port 4
PCI Express Root Port 5
PCI Express Root Port 6
PCI Express Root Port 7
PCI Express Root Port 8
The control of Active State Power Management on both NB side and SB side of the DMI Link.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.3.3 Chipset Menu

PCH Azalia Configuration:

Description: Select Enabled to enable the Azalia High Definition Audio feature. The settings are Enabled and Disabled.

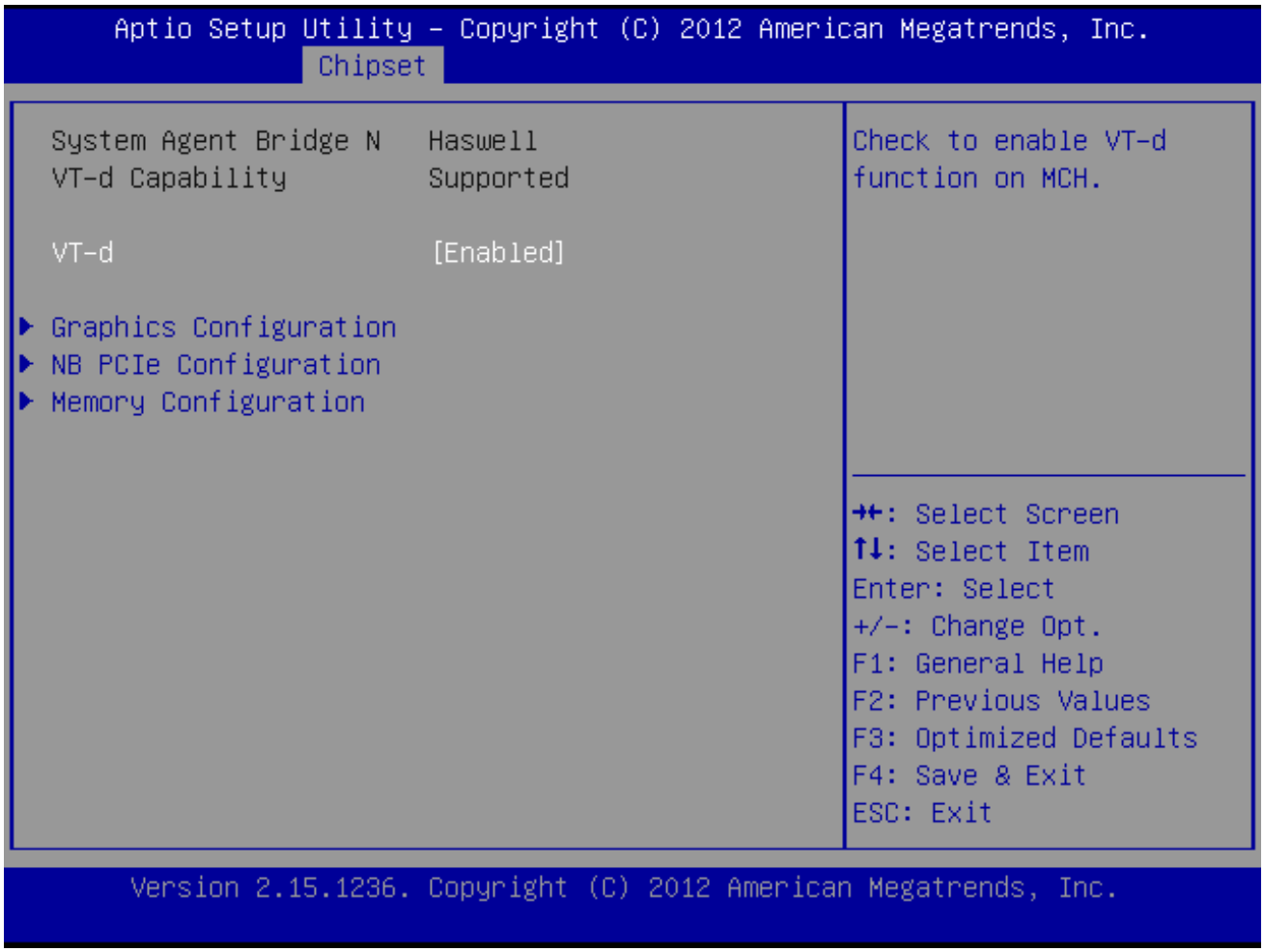

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
PCH Azalia Configuration
Azalia [Auto]
Control Detection of the Azalia device.
Disabled = Azalia will be unconditionally disabled
Enabled = Azalia will be unconditionally Enabled
Auto = Azalia will be
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.3.4 Chipset Menu

VT-d Capability: (Available when supported by the CPU)

VT-d *< Disabled/enabled >*

Description: Select Enabled to enable Intel's \/irtualization Technology support for Direct l/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource sharing across the lntel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and Disabled.

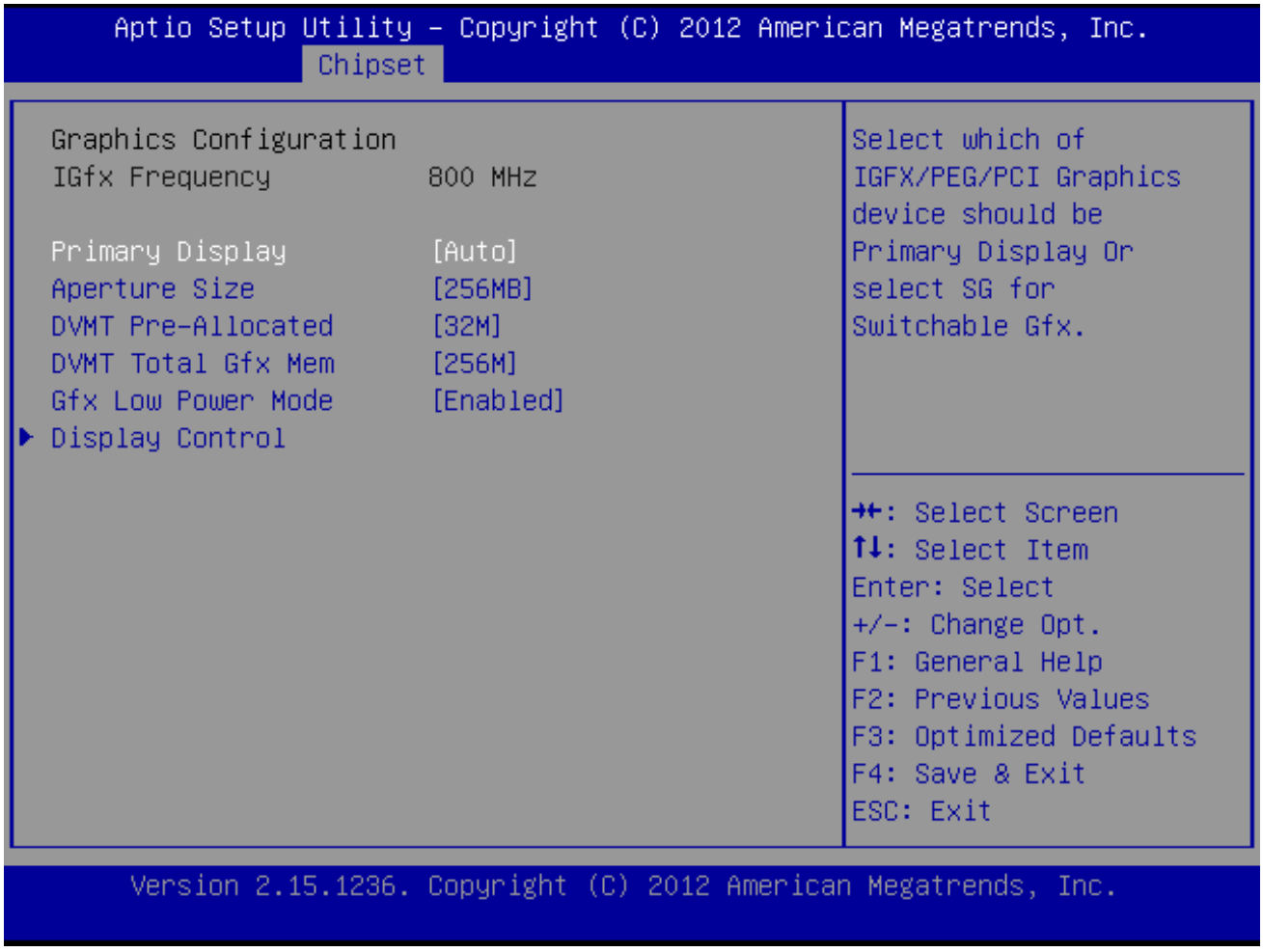


- 3.3.6 Chipset Menu

Graphics Configuration:

Description: Select primary video device that BIOS will use to for output
Default setting is <Auto>

IGT : Integrated Graphics Device.
PEG : PCI Express Graphics

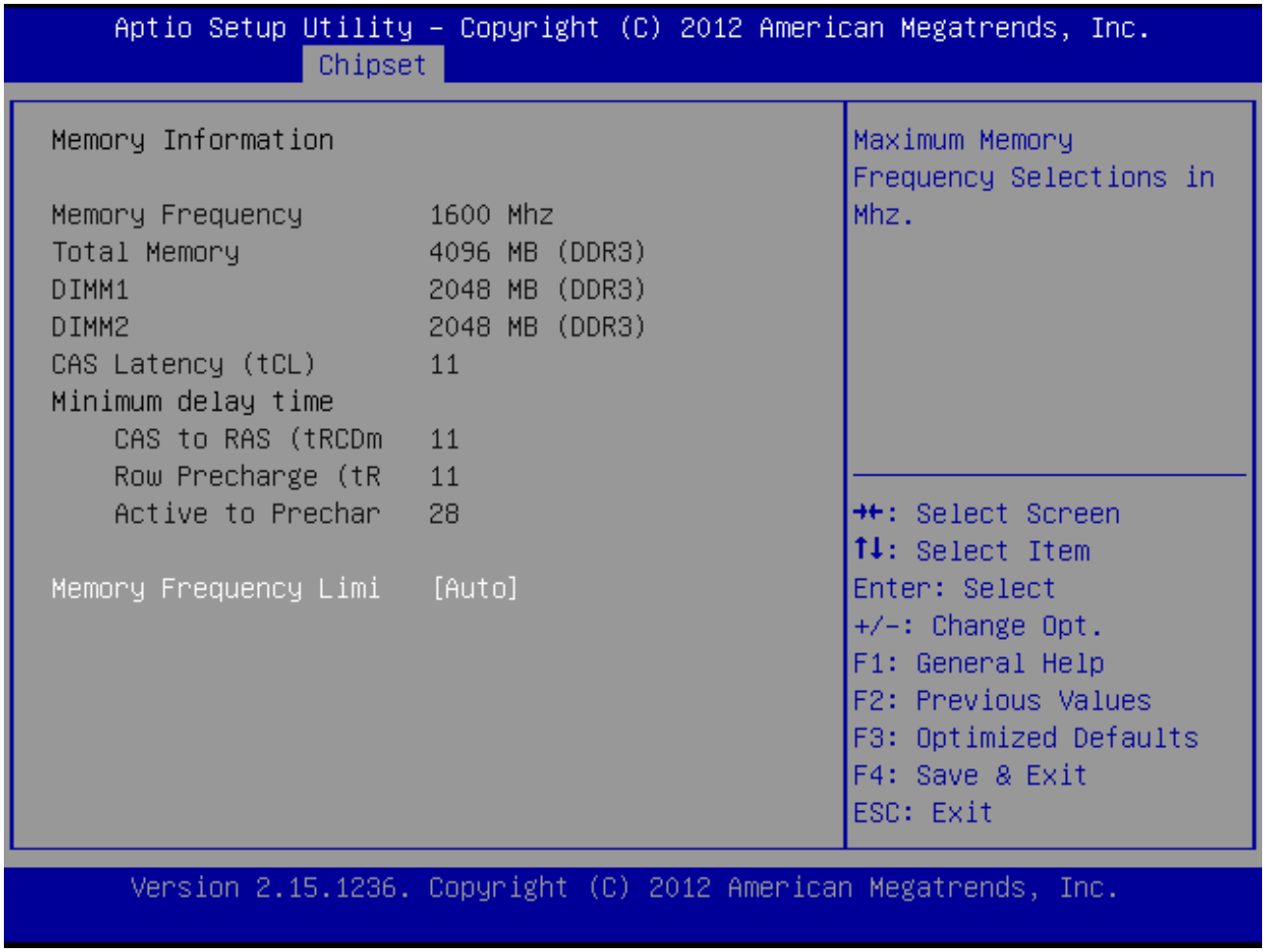

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
Graphics Configuration
IGfx Frequency 800 MHz
Primary Display [Auto]
Aperture Size [256MB]
DVMT Pre-Allocated [32M]
DVMT Total Gfx Mem [256M]
Gfx Low Power Mode [Enabled]
Display Control
Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- 3.3.7 Chipset Menu

Memory Information

This item displays the current Memory Frequency, Memory Type and Memory Reference Code Revision.

Memory Frequency:
Description: This feature allows the user to select the memory speed. Under normal conditions, please set this to Auto.



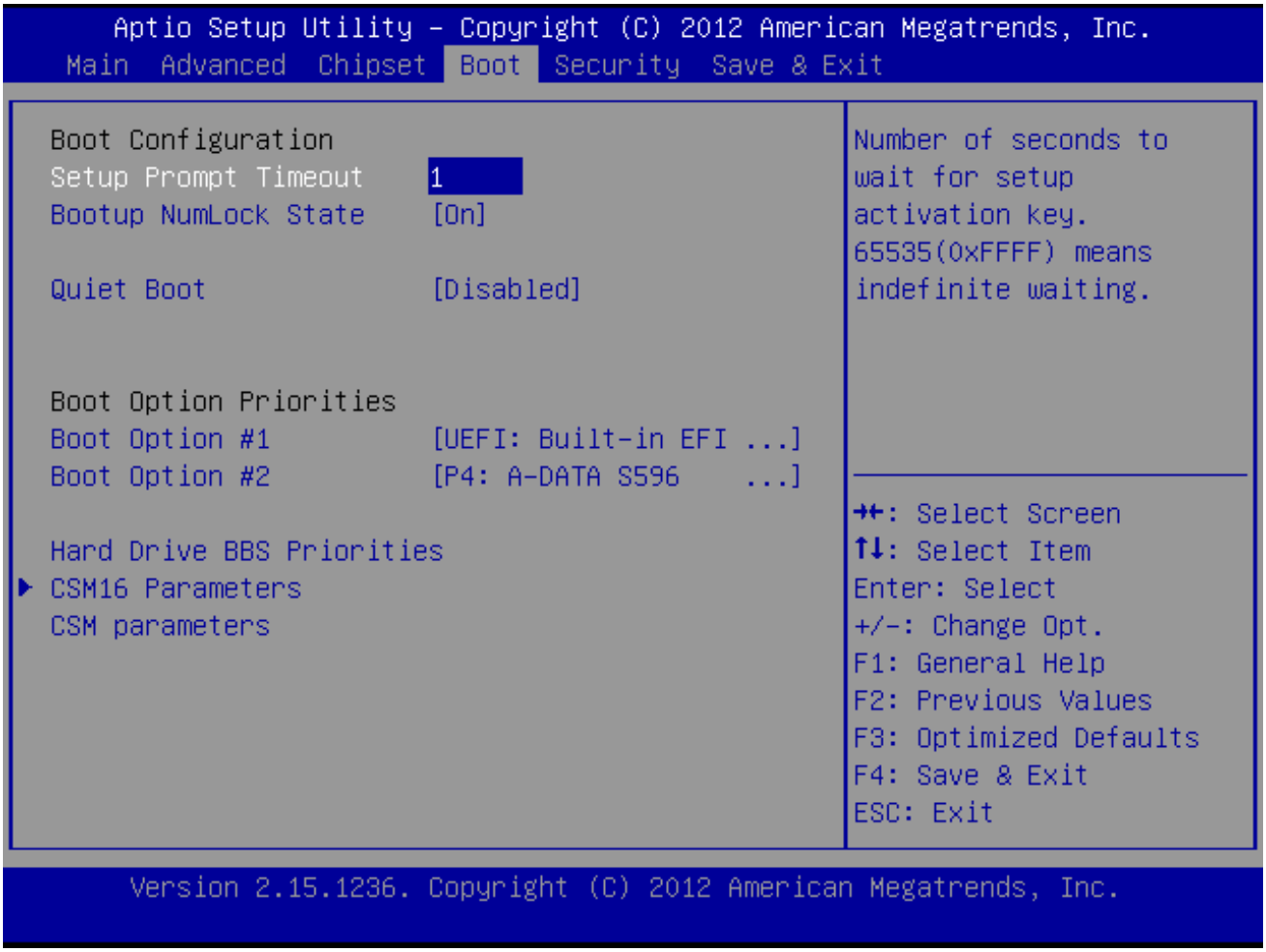
- 3.4 Boot Menu

Boot Configuration:

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots from during startup.

Quiet Boot:

This feature allows booting with initialization with a minimal set of devices required to launch an active boot option. The options are Disabled, and Enabled.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Boot Option Priorities
Boot Option #1 [UEFI: Built-in EFI ...]
Boot Option #2 [P4: A-DATA S596 ...]
Hard Drive BBS Priorities
CSM16 Parameters
CSM parameters
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

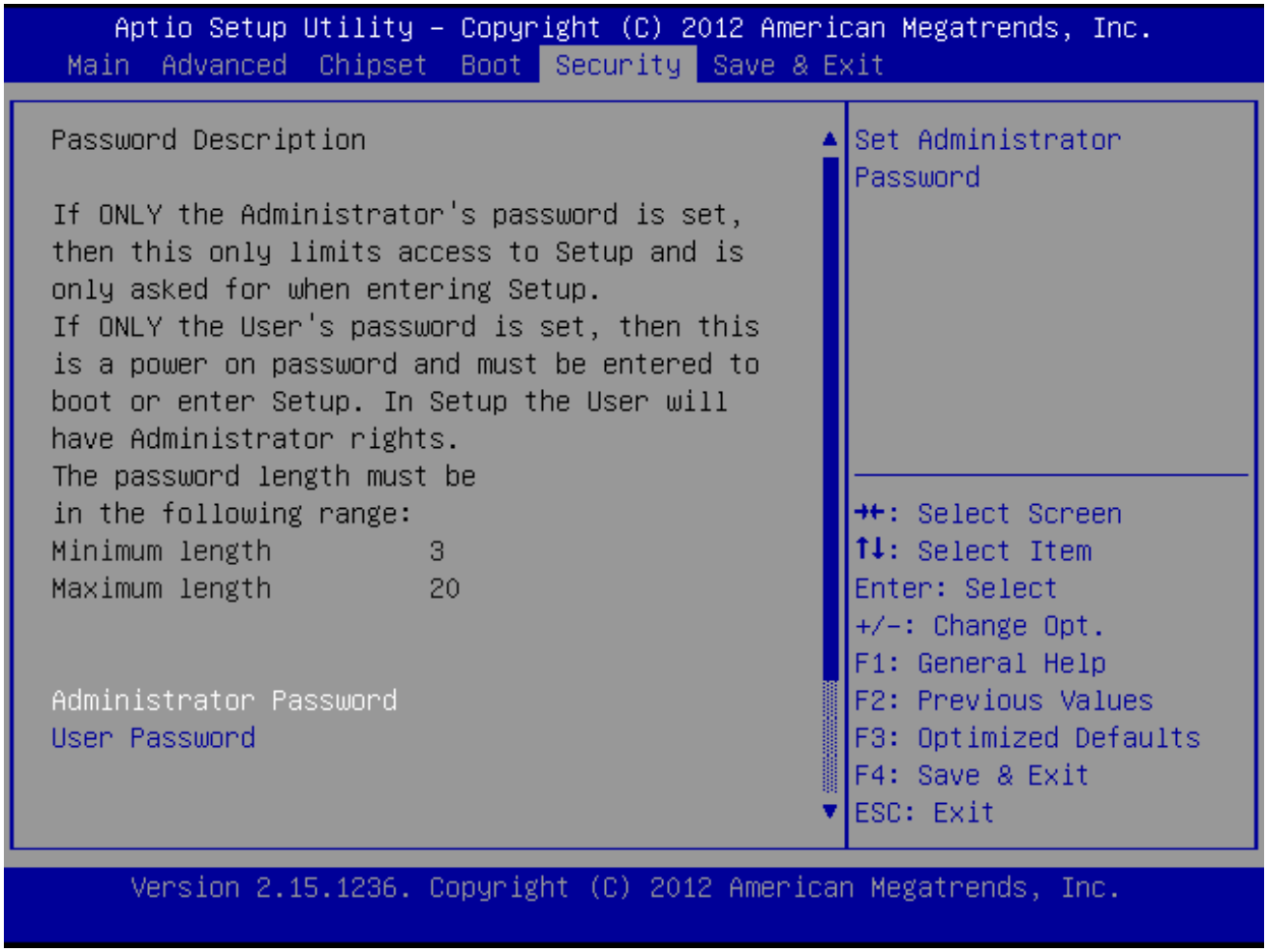
- 3.5 Security Menu

Password Description:

Description:

Administrator Password : Press Enter to create a new, or change an existing Administrator password.

User Password : Press Enter to create a new, or change an existing User password.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

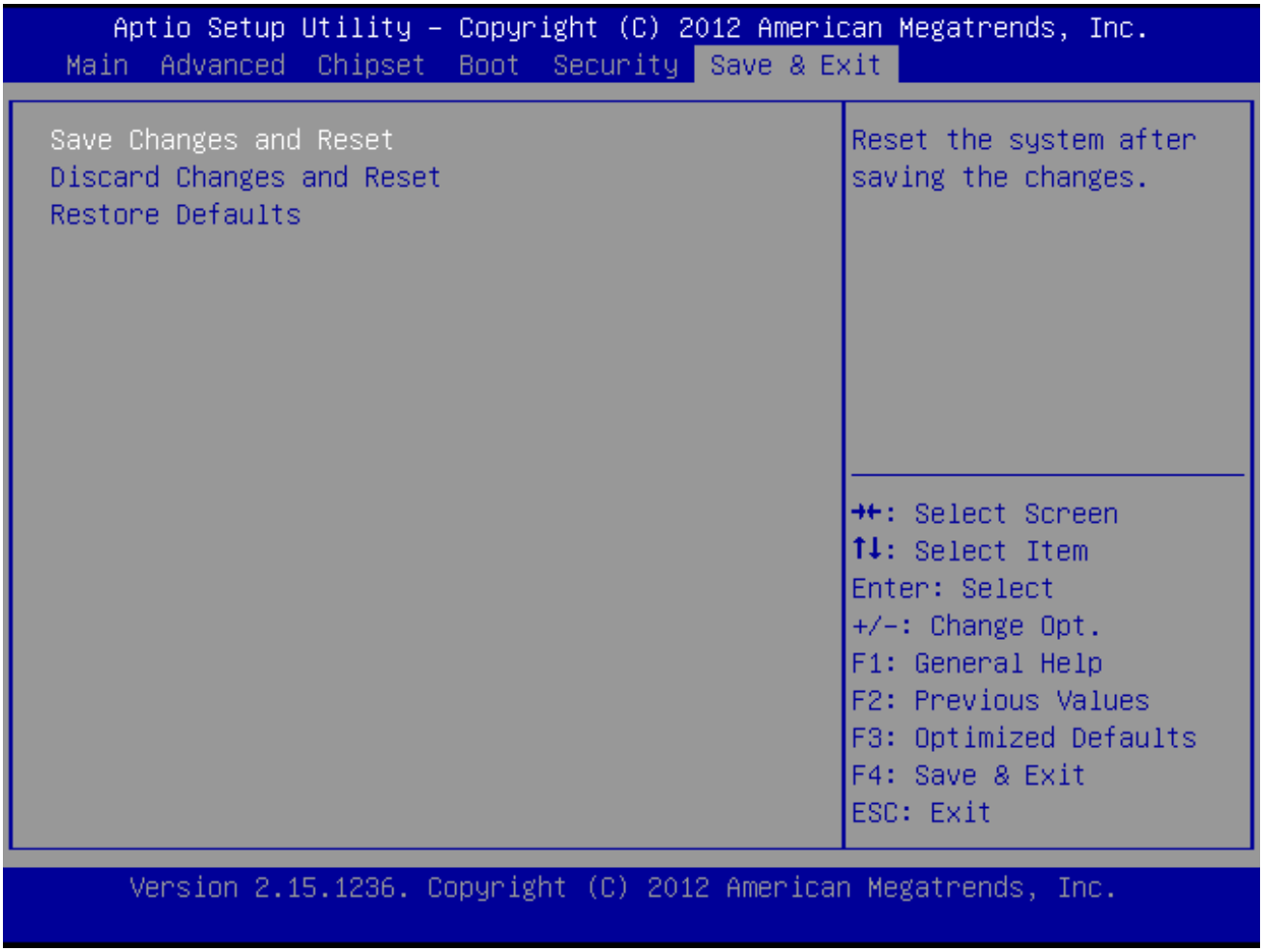
- 3.6 Save & Exit Menu

Description:

Save Change and Reset : When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>

Discard Changes and Reset : Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Restored Defaults : To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Reset
Discard Changes and Reset
Restore Defaults
Reset the system after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

4.1 GPIO Sample Program for DOS environment

```
//AEWIN Digital IO Program for MB-8302(Dos Version)
#include <stdio.h>
#include <string.h>
#include <dos.h>
#include <stdlib.h>
#include <inlines/pc.h>

#define   index_port     0x2E
#define   data_port      0x2F

int Read_SIO(int reg);
void help();
void Enter_SIO();
void Exit_SIO();
void Write_SIO(int reg, int val);
void Global_Setting();

int main(int argc, char *argv[])
{
      int   data_rw8, val;

      if (argc!=2){
            help();
            return;
      }

      Enter_SIO();
      Global_Setting();

      if(strcmp(argv[1], "-r") == 0){
            data_rw8 = Read_SIO(0x8A);
            printf("The GPO 87 - 84 and GPI 83 - 80 value is ");
            if((data_rw8 & 0x80) == 0x80)
            {
```

```
        val = 1;
        printf("%d",val);
    } else {
        val = 0;
        printf("%d",val);
    }
    if((data_rw8 & 0x40) == 0x40)
    {
        val = 1;
        printf("%d",val);
    } else {
        val = 0;
        printf("%d",val);
    }
    if((data_rw8 & 0x20) == 0x20)
    {
        val = 1;
        printf("%d",val);
    } else {
        val = 0;
        printf("%d",val);
    }
    if((data_rw8 & 0x10) == 0x10)
    {
        val = 1;
        printf("%d",val);
    } else {
        val = 0;
        printf("%d",val);
    }
    if((data_rw8 & 0x08) == 0x08)
    {
        val = 1;
        printf("%d",val);
    } else {
        val = 0;
        printf("%d",val);
```

```
        }
        if((data_rw8 & 0x04) == 0x04)
        {
                val = 1;
                printf("%d",val);
        } else {
                val = 0;
                printf("%d",val);
        }
        if((data_rw8 & 0x02) == 0x02)
        {
                val = 1;
                printf("%d",val);
        } else {
                val = 0;
                printf("%d",val);
        }
        if((data_rw8 & 0x01) == 0x01)
        {
                val = 1;
                printf("%d",val);
        } else {
                val = 0;
                printf("%d",val);
        }
        printf("b\n");
}
else if(strcmp(argv[1], "-84h") == 0){
        val = 0x10;
        data_rw8 = Read_SIO(0x89);
        data_rw8 |= val;
        Write_SIO(0x89, data_rw8);
        printf("Set GPO84 to high\n");
}
else if(strcmp(argv[1], "-84l") == 0){
        val = 0x10;
        data_rw8 = Read_SIO(0x89);
```

```
        data_rw8 &= ~val;
        Write_SIO(0x89, data_rw8);
        printf("Clear GPO84 to low\n");
    }
    else if(strcmp(argv[1], "-85h") == 0){
        val = 0x20;
        data_rw8 = Read_SIO(0x89);
        data_rw8 |= val;
        Write_SIO(0x89, data_rw8);
        printf("Set GPO85 to high\n");
    }
    else if(strcmp(argv[1], "-85l") == 0){
        val = 0x20;
        data_rw8 = Read_SIO(0x89);
        data_rw8 &= ~val;
        Write_SIO(0x89, data_rw8);
        printf("Clear GPO85 to low\n");
    }
    else if(strcmp(argv[1], "-86h") == 0){
        val = 0x40;
        data_rw8 = Read_SIO(0x89);
        data_rw8 |= val;
        Write_SIO(0x89, data_rw8);
        printf("Set GPO86 to high\n");
    }
    else if(strcmp(argv[1], "-86l") == 0){
        val = 0x40;
        data_rw8 = Read_SIO(0x89);
        data_rw8 &= ~val;
        Write_SIO(0x89, data_rw8);
        printf("Clear GPO86 to low\n");
    }
    else if(strcmp(argv[1], "-87h") == 0){
        val = 0x80;
        data_rw8 = Read_SIO(0x89);
        data_rw8 |= val;
        Write_SIO(0x89, data_rw8);
```

```
            printf("Set GPO87 to high\n");
        }
        else if(strcmp(argv[1], "-87l") == 0){
            val = 0x80;
            data_rw8 = Read_SIO(0x89);
            data_rw8 &= ~val;
            Write_SIO(0x89, data_rw8);
            printf("Clear GPO87 to low\n");
        }
        else{
            help();
        }

        Exit_SIO();
        return;
}

void help()
{
        printf("AEWIN Digital IO Program\n");
        printf("====================================\n");
        printf("Read the input port GPI80~GPI83 and output port GPO84~GPO87\n");
        printf("ex:     digit_io -r\n");
        printf("\n");
        printf("digit_io -xy\n");
        printf("           x=84~87[GPO84~87]\n");
        printf("           y=h/l[Set high/low]\n");
        printf("ex:     digit_io -84h[Set GPO84 to high]\n");
        printf("====================================\n");
}

void Enter_SIO()
{
        outportb(index_port, 0x87);
        delay(1);
        outportb(index_port, 0x87);
}
```

```
void Exit_SIO()
{
	outportb(index_port, 0xAA);
}

void Write_SIO(int reg, int val)
{
	outportb(index_port, reg);
	outportb(data_port,    val);
}

int Read_SIO(int reg)
{
	outportb(index_port, reg);
	return inportb(data_port);
}

void Global_Setting()
{
	int data_rw8;
	long int data_rw32;

	//Define SIO GP80~83 to input, SIO GP84~87 to output
	Write_SIO(0x07, 0x06);
	Write_SIO(0x30, 0x01);                    //Select logical device 6
	data_rw8 = Read_SIO(0x88) | 0xF0;
	Write_SIO(0x88, data_rw8);
}
```

4.2 Watchdog timer Sample Program for DOS environment

```
//AEWIN Watch dog program for MB-8302(Dos Version)
#include <stdio.h>
#include <string.h>
#include <dos.h>
#include <stdlib.h>
#include <inlines/pc.h>

#define index_port 0x2E                    //Super IO Index port address
#define data_port   0x2F                   //Super IO Data port address

void Enter_sio_config();
void Exit_sio_config();
void help();

int main(int argc, char *argv[])
{
      int data_rw8;
      int data_r8;

            if (argc<2){
            help();
            return;
      }

      Enter_sio_config();
            if(strcmp(argv[1], "-s") == 0){
                  //Show Watchdog Register Settings
            outportb(index_port, 0xF5);
            data_rw8 = inportb(data_port)&0x08;
            if(data_rw8 == 0x00){
                  //second mode
                  outportb(index_port, 0xF6);
                  data_rw8 = inportb(data_port);
                  printf("Second mode: %d second\n", data_rw8);
```

```
        }
        else{
            //minute mode
            outportb(index_port, 0xF6);
            data_rw8 = inportb(data_port);
            printf("Minute mode: %d minute\n", data_rw8);
        }
        }
    else if(strcmp(argv[1], "-t") ==0 ){
        //Set Time-out Value
        if(argv[2] == NULL){
            help();
            return;
        }
        else{
            outportb(index_port, 0xF5);
            data_rw8 = inportb(data_port)&0xF7;
            outportb(data_port, data_rw8);
                sscanf(argv[2], "%d", &data_rw8);
            outportb(index_port, 0xF6);
            outportb(data_port,    data_rw8);
            outportb(index_port, 0xFA);
            outportb(data_port, 0x01);
            outportb(index_port, 0xF5);
            data_r8 = inportb(data_port)|0x20;
            outportb(data_port, data_r8);
                printf("Watchdog Timer will count down for %d second(s)\n", data_rw8);
        }
    }
    else if(strcmp(argv[1], "-m") ==0 ){
        //Set Time-out Value
        if(argv[2] == NULL){
            help();
            return;
        }
        else{
            outportb(index_port, 0xF5);
```

```
                data_rw8 = (inportb(data_port) | 0x08);
                outportb(data_port, data_rw8);
                        sscanf(argv[2], "%d", &data_rw8);
                outportb(index_port, 0xF6);
                outportb(data_port,    data_rw8);
                outportb(index_port, 0xFA);
                outportb(data_port, 0x01);
                outportb(index_port, 0xF5);
                data_r8 = inportb(data_port)|0x20;
                outportb(data_port, data_r8);
                        printf("Watchdog Timer will count down for %d minute(s)\n", data_rw8);
            }
        }
        Exit_sio_config();
        return;
}

void Enter_sio_config()                         //Enter W83627DHG Configuration
{
        outportb(index_port, 0x87);
        delay(1);                               //Delay some time
        outportb(index_port, 0x87);
        outportb(index_port, 0x07);                     //Super IO Selct Bank Register Number
        outportb(data_port , 0x07);                     //Select logical device 7
}

void Exit_sio_config()                          //Exit W83627DHG Configuration
{
        outportb(index_port, 0xAA);
}

void help()
{
        printf("AEWIN Watchdog Timer Program\n");
        printf("Usage: WDT -s          (Show Watchdog Register Settings)\n");
        printf("Usage: WDT -t xxx (Set Time-out Value)\n");
        printf("                        xxx = 1 ~ 255 seconds\n");
```

```
    printf("                xxx = 0 : Time-out Disable \n");
    printf("Usage: WDT -m xxx (Set Time-out Value)\n");
    printf("                xxx = 1 ~ 255 minutes\n");
    printf("                xxx = 0 : Time-out Disable \n");
}
```

Device Resources

Resource	Share	Device Description	
	DMA 04	Exclusive	Direct memory access controller
	IRQ 00	Exclusive	System timer
	IRQ 01	Exclusive	Standard PS/2 Keyboard
	IRQ 03	Exclusive	Communications Port (COM2)
	IRQ 04	Exclusive	Communications Port (COM1)
	IRQ 05	Shared	Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
	IRQ 07	Shared	Communications Port (COM3)
	IRQ 07	Shared	Communications Port (COM4)
	IRQ 08	Exclusive	System CMOS/real time clock
	IRQ 10	Shared	Communications Port (COM5)
	IRQ 10	Shared	Communications Port (COM6)
	IRQ 100	Exclusive	Microsoft ACPI-Compliant System
	IRQ 101	Exclusive	Microsoft ACPI-Compliant System
	IRQ 102	Exclusive	Microsoft ACPI-Compliant System
	IRQ 103	Exclusive	Microsoft ACPI-Compliant System
	IRQ 104	Exclusive	Microsoft ACPI-Compliant System
	IRQ 105	Exclusive	Microsoft ACPI-Compliant System
	IRQ 106	Exclusive	Microsoft ACPI-Compliant System
	IRQ 107	Exclusive	Microsoft ACPI-Compliant System
	IRQ 108	Exclusive	Microsoft ACPI-Compliant System
	IRQ 109	Exclusive	Microsoft ACPI-Compliant System
	IRQ 110	Exclusive	Microsoft ACPI-Compliant System
	IRQ 111	Exclusive	Microsoft ACPI-Compliant System
	IRQ 112	Exclusive	Microsoft ACPI-Compliant System
	IRQ 113	Exclusive	Microsoft ACPI-Compliant System
	IRQ 114	Exclusive	Microsoft ACPI-Compliant System
	IRQ 115	Exclusive	Microsoft ACPI-Compliant System

IRQ 116	Exclusive	Microsoft ACPI-Compliant System
IRQ 117	Exclusive	Microsoft ACPI-Compliant System
IRQ 118	Exclusive	Microsoft ACPI-Compliant System
IRQ 119	Exclusive	Microsoft ACPI-Compliant System
IRQ 12	Exclusive	Microsoft PS/2 Mouse
IRQ 120	Exclusive	Microsoft ACPI-Compliant System
IRQ 121	Exclusive	Microsoft ACPI-Compliant System
IRQ 122	Exclusive	Microsoft ACPI-Compliant System
IRQ 123	Exclusive	Microsoft ACPI-Compliant System
IRQ 124	Exclusive	Microsoft ACPI-Compliant System
IRQ 125	Exclusive	Microsoft ACPI-Compliant System
IRQ 126	Exclusive	Microsoft ACPI-Compliant System
IRQ 127	Exclusive	Microsoft ACPI-Compliant System
IRQ 128	Exclusive	Microsoft ACPI-Compliant System
IRQ 129	Exclusive	Microsoft ACPI-Compliant System
IRQ 13	Exclusive	Numeric data processor
IRQ 130	Exclusive	Microsoft ACPI-Compliant System
IRQ 131	Exclusive	Microsoft ACPI-Compliant System
IRQ 131071	Exclusive	Intel(R) 8 Series/C220 Series PCI Express Root Port #1 - 8C10
IRQ 131071	Exclusive	Intel(R) 8 Series/C220 Series PCI Express Root Port #4 - 8C16
IRQ 131071	Exclusive	Intel(R) Xeon(R) processor E3-1200 v3/4th Gen Core processor PCI Express x16 Controller - 0C01
IRQ 132	Exclusive	Microsoft ACPI-Compliant System
IRQ 133	Exclusive	Microsoft ACPI-Compliant System
IRQ 134	Exclusive	Microsoft ACPI-Compliant System
IRQ 135	Exclusive	Microsoft ACPI-Compliant System
IRQ 136	Exclusive	Microsoft ACPI-Compliant System
IRQ 137	Exclusive	Microsoft ACPI-Compliant System
IRQ 138	Exclusive	Microsoft ACPI-Compliant System
IRQ 139	Exclusive	Microsoft ACPI-Compliant System

IRQ 140	Exclusive	Microsoft ACPI-Compliant System
IRQ 141	Exclusive	Microsoft ACPI-Compliant System
IRQ 142	Exclusive	Microsoft ACPI-Compliant System
IRQ 143	Exclusive	Microsoft ACPI-Compliant System
IRQ 144	Exclusive	Microsoft ACPI-Compliant System
IRQ 145	Exclusive	Microsoft ACPI-Compliant System
IRQ 146	Exclusive	Microsoft ACPI-Compliant System
IRQ 147	Exclusive	Microsoft ACPI-Compliant System
IRQ 148	Exclusive	Microsoft ACPI-Compliant System
IRQ 149	Exclusive	Microsoft ACPI-Compliant System
IRQ 150	Exclusive	Microsoft ACPI-Compliant System
IRQ 151	Exclusive	Microsoft ACPI-Compliant System
IRQ 152	Exclusive	Microsoft ACPI-Compliant System
IRQ 153	Exclusive	Microsoft ACPI-Compliant System
IRQ 154	Exclusive	Microsoft ACPI-Compliant System
IRQ 155	Exclusive	Microsoft ACPI-Compliant System
IRQ 156	Exclusive	Microsoft ACPI-Compliant System
IRQ 157	Exclusive	Microsoft ACPI-Compliant System
IRQ 158	Exclusive	Microsoft ACPI-Compliant System
IRQ 159	Exclusive	Microsoft ACPI-Compliant System
IRQ 16	Shared	Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
IRQ 16	Shared	High Definition Audio Controller
IRQ 16	Shared	Intel(R) Management Engine Interface
IRQ 160	Exclusive	Microsoft ACPI-Compliant System
IRQ 161	Exclusive	Microsoft ACPI-Compliant System
IRQ 162	Exclusive	Microsoft ACPI-Compliant System
IRQ 163	Exclusive	Microsoft ACPI-Compliant System
IRQ 164	Exclusive	Microsoft ACPI-Compliant System
IRQ 165	Exclusive	Microsoft ACPI-Compliant System
IRQ 166	Exclusive	Microsoft ACPI-Compliant System
IRQ 167	Exclusive	Microsoft ACPI-Compliant System
IRQ 168	Exclusive	Microsoft ACPI-Compliant System

IRQ 169	Exclusive	Microsoft ACPI-Compliant System
IRQ 170	Exclusive	Microsoft ACPI-Compliant System
IRQ 171	Exclusive	Microsoft ACPI-Compliant System
IRQ 172	Exclusive	Microsoft ACPI-Compliant System
IRQ 173	Exclusive	Microsoft ACPI-Compliant System
IRQ 174	Exclusive	Microsoft ACPI-Compliant System
IRQ 175	Exclusive	Microsoft ACPI-Compliant System
IRQ 176	Exclusive	Microsoft ACPI-Compliant System
IRQ 177	Exclusive	Microsoft ACPI-Compliant System
IRQ 178	Exclusive	Microsoft ACPI-Compliant System
IRQ 179	Exclusive	Microsoft ACPI-Compliant System
IRQ 180	Exclusive	Microsoft ACPI-Compliant System
IRQ 181	Exclusive	Microsoft ACPI-Compliant System
IRQ 182	Exclusive	Microsoft ACPI-Compliant System
IRQ 183	Exclusive	Microsoft ACPI-Compliant System
IRQ 184	Exclusive	Microsoft ACPI-Compliant System
IRQ 185	Exclusive	Microsoft ACPI-Compliant System
IRQ 186	Exclusive	Microsoft ACPI-Compliant System
IRQ 187	Exclusive	Microsoft ACPI-Compliant System
IRQ 188	Exclusive	Microsoft ACPI-Compliant System
IRQ 189	Exclusive	Microsoft ACPI-Compliant System
IRQ 19	Shared	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
IRQ 190	Exclusive	Microsoft ACPI-Compliant System
IRQ 22	Shared	High Definition Audio Controller
IRQ 23	Shared	Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26
IRQ 524288	Exclusive	Intel(R) USB 3.0 eXtensible Host Controller
IRQ 65536	Exclusive	Intel(R) Ethernet Connection I217-LM
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2

IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection #2
IRQ 65536	Exclusive	Intel(R) HD Graphics 4600
IRQ 81	Exclusive	Microsoft ACPI-Compliant System
IRQ 82	Exclusive	Microsoft ACPI-Compliant System
IRQ 83	Exclusive	Microsoft ACPI-Compliant System
IRQ 84	Exclusive	Microsoft ACPI-Compliant System
IRQ 85	Exclusive	Microsoft ACPI-Compliant System
IRQ 86	Exclusive	Microsoft ACPI-Compliant System
IRQ 87	Exclusive	Microsoft ACPI-Compliant System
IRQ 88	Exclusive	Microsoft ACPI-Compliant System
IRQ 89	Exclusive	Microsoft ACPI-Compliant System
IRQ 90	Exclusive	Microsoft ACPI-Compliant System
IRQ 91	Exclusive	Microsoft ACPI-Compliant System
IRQ 92	Exclusive	Microsoft ACPI-Compliant System
IRQ 93	Exclusive	Microsoft ACPI-Compliant System
IRQ 94	Exclusive	Microsoft ACPI-Compliant System
IRQ 95	Exclusive	Microsoft ACPI-Compliant System
IRQ 96	Exclusive	Microsoft ACPI-Compliant System
IRQ 97	Exclusive	Microsoft ACPI-Compliant System
IRQ 98	Exclusive	Microsoft ACPI-Compliant System
IRQ 99	Exclusive	Microsoft ACPI-Compliant System
Memory 000A0000-000BFFFF	Shared	Intel(R) HD Graphics 4600
Memory 000A0000-000BFFFF	Shared	PCI bus
Memory 000D0000-000D3FFF	Shared	PCI bus
Memory 000D4000-000D7FFF	Shared	PCI bus
Memory 000D8000-000DBFFF	Shared	PCI bus
Memory	Shared	PCI bus

000DC000-000DFFFF		
Memory 000E0000-000E3FFF	Shared	PCI bus
Memory 000E4000-000E7FFF	Shared	PCI bus
Memory DF200000-FEAFFFFF	Shared	PCI bus
Memory E0000000-EFFFFFFF	Exclusive	Intel(R) HD Graphics 4600
Memory F7800000-F7BFFFFF	Exclusive	Intel(R) HD Graphics 4600
Memory F7C00000-F7C1FFFF	Exclusive	Intel(R) I211 Gigabit Network Connection #2
Memory F7C00000-F7CFFFFF	Exclusive	Intel(R) 8 Series/C220 Series PCI Express Root Port #4 - 8C16
Memory F7C20000-F7C23FFF	Exclusive	Intel(R) I211 Gigabit Network Connection #2
Memory F7D00000-F7D1FFFF	Exclusive	Intel(R) Ethernet Connection I217-LM
Memory F7D20000-F7D2FFFF	Exclusive	Intel(R) USB 3.0 eXtensible Host Controller
Memory F7D30000-F7D33FFF	Exclusive	High Definition Audio Controller
Memory F7D34000-F7D37FFF	Exclusive	High Definition Audio Controller
Memory F7D39000-F7D390FF	Exclusive	Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
Memory F7D3A000-F7D3A7FF	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Memory F7D3B000-F7D3B3FF	Exclusive	Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26
Memory F7D3C000-F7D3C3FF	Exclusive	Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
Memory	Exclusive	Intel(R) Ethernet Connection I217-LM

F7D3D000-F7D3DFFF		
Memory F7D3F000-F7D3F00F	Exclusive	Intel(R) Management Engine Interface
Memory F7FDF000-F7FDFFFF	Exclusive	Motherboard resources
Memory F7FE0000-F7FEFFFF	Exclusive	Motherboard resources
Memory F8000000-FBFFFFFF	Exclusive	Motherboard resources
Memory FED00000-FED003FF	Exclusive	High precision event timer
Memory FED10000-FED17FFF	Exclusive	Motherboard resources
Memory FED18000-FED18FFF	Exclusive	Motherboard resources
Memory FED19000-FED19FFF	Exclusive	Motherboard resources
Memory FED1C000-FED1FFFF	Exclusive	Motherboard resources
Memory FED20000-FED3FFFF	Exclusive	Motherboard resources
Memory FED40000-FED44FFF	Exclusive	System board
Memory FED45000-FED8FFFF	Exclusive	Motherboard resources
Memory FED90000-FED93FFF	Exclusive	Motherboard resources
Memory FEE00000-FEEFFFFF	Exclusive	Motherboard resources
Memory FF000000-FFFFFFFF	Exclusive	Intel(R) 82802 Firmware Hub Device
Memory FF000000-FFFFFFFF	Exclusive	Motherboard resources
Port 0000-001F	Exclusive	Direct memory access controller

Port 0000-0CF7	Shared	PCI bus
Port 0010-001F	Exclusive	Motherboard resources
Port 0020-0021	Exclusive	Programmable interrupt controller
Port 0022-003F	Exclusive	Motherboard resources
Port 0024-0025	Exclusive	Programmable interrupt controller
Port 0028-0029	Exclusive	Programmable interrupt controller
Port 002C-002D	Exclusive	Programmable interrupt controller
Port 002E-002F	Exclusive	Motherboard resources
Port 0030-0031	Exclusive	Programmable interrupt controller
Port 0034-0035	Exclusive	Programmable interrupt controller
Port 0038-0039	Exclusive	Programmable interrupt controller
Port 003C-003D	Exclusive	Programmable interrupt controller
Port 0040-0043	Exclusive	System timer
Port 0044-005F	Exclusive	Motherboard resources
Port 004E-004F	Exclusive	Motherboard resources
Port 0050-0053	Exclusive	System timer
Port 0060-0060	Exclusive	Standard PS/2 Keyboard
Port 0061-0061	Exclusive	Motherboard resources
Port 0062-0063	Exclusive	Motherboard resources
Port 0063-0063	Exclusive	Motherboard resources
Port 0064-0064	Exclusive	Standard PS/2 Keyboard
Port 0065-0065	Exclusive	Motherboard resources
Port 0065-006F	Exclusive	Motherboard resources
Port 0067-0067	Exclusive	Motherboard resources
Port 0070-0070	Exclusive	Motherboard resources
Port 0070-0077	Exclusive	System CMOS/real time clock
Port 0072-007F	Exclusive	Motherboard resources
Port 0080-0080	Exclusive	Motherboard resources
Port 0080-0080	Exclusive	Motherboard resources
Port 0081-0091	Exclusive	Direct memory access controller
Port 0084-0086	Exclusive	Motherboard resources
Port 0088-0088	Exclusive	Motherboard resources

Port 008C-008E	Exclusive	Motherboard resources
Port 0090-009F	Exclusive	Motherboard resources
Port 0092-0092	Exclusive	Motherboard resources
Port 0093-009F	Exclusive	Direct memory access controller
Port 00A0-00A1	Exclusive	Programmable interrupt controller
Port 00A2-00BF	Exclusive	Motherboard resources
Port 00A4-00A5	Exclusive	Programmable interrupt controller
Port 00A8-00A9	Exclusive	Programmable interrupt controller
Port 00AC-00AD	Exclusive	Programmable interrupt controller
Port 00B0-00B1	Exclusive	Programmable interrupt controller
Port 00B2-00B3	Exclusive	Motherboard resources
Port 00B4-00B5	Exclusive	Programmable interrupt controller
Port 00B8-00B9	Exclusive	Programmable interrupt controller
Port 00BC-00BD	Exclusive	Programmable interrupt controller
Port 00C0-00DF	Exclusive	Direct memory access controller
Port 00E0-00EF	Exclusive	Motherboard resources
Port 00F0-00F0	Exclusive	Numeric data processor
Port 02E0-02E7	Exclusive	Communications Port (COM6)
Port 02E8-02EF	Exclusive	Communications Port (COM4)
Port 02F0-02F7	Exclusive	Communications Port (COM5)
Port 02F8-02FF	Exclusive	Communications Port (COM2)
Port 03B0-03BB	Shared	Intel(R) HD Graphics 4600
Port 03C0-03DF	Shared	Intel(R) HD Graphics 4600
Port 03E8-03EF	Exclusive	Communications Port (COM3)
Port 03F8-03FF	Exclusive	Communications Port (COM1)
Port 04D0-04D1	Exclusive	Motherboard resources
Port 04D0-04D1	Exclusive	Programmable interrupt controller
Port 0680-069F	Exclusive	Motherboard resources
Port 0A00-0A0F	Exclusive	Motherboard resources
Port 0A10-0A1F	Exclusive	Motherboard resources
Port 0A20-0A2F	Exclusive	Motherboard resources
Port 0D00-FFFF	Shared	PCI bus

Port 164E-164F	Exclusive	Motherboard resources
Port 1800-18FE	Exclusive	Motherboard resources
Port 1854-1857	Exclusive	Motherboard resources
Port 1C00-1CFE	Exclusive	Motherboard resources
Port 1D00-1DFE	Exclusive	Motherboard resources
Port 1E00-1EFE	Exclusive	Motherboard resources
Port 1F00-1FFE	Exclusive	Motherboard resources
Port E000-EFFF	Exclusive	Intel(R) 8 Series/C220 Series PCI Express Root Port #4 - 8C16
Port F000-F03F	Exclusive	Intel(R) HD Graphics 4600
Port F040-F05F	Exclusive	Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
Port F060-F07F	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Port F0A0-F0A3	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Port F0B0-F0B7	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Port F0C0-F0C3	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Port F0D0-F0D7	Exclusive	Intel(R) 8 Series/C220 Series SATA AHCI Controller - 8C02
Port FFFF-FFFF	Exclusive	Motherboard resources
Port FFFF-FFFF	Exclusive	Motherboard resources
Port FFFF-FFFF	Exclusive	Motherboard resources